Vol. 906 Number 3

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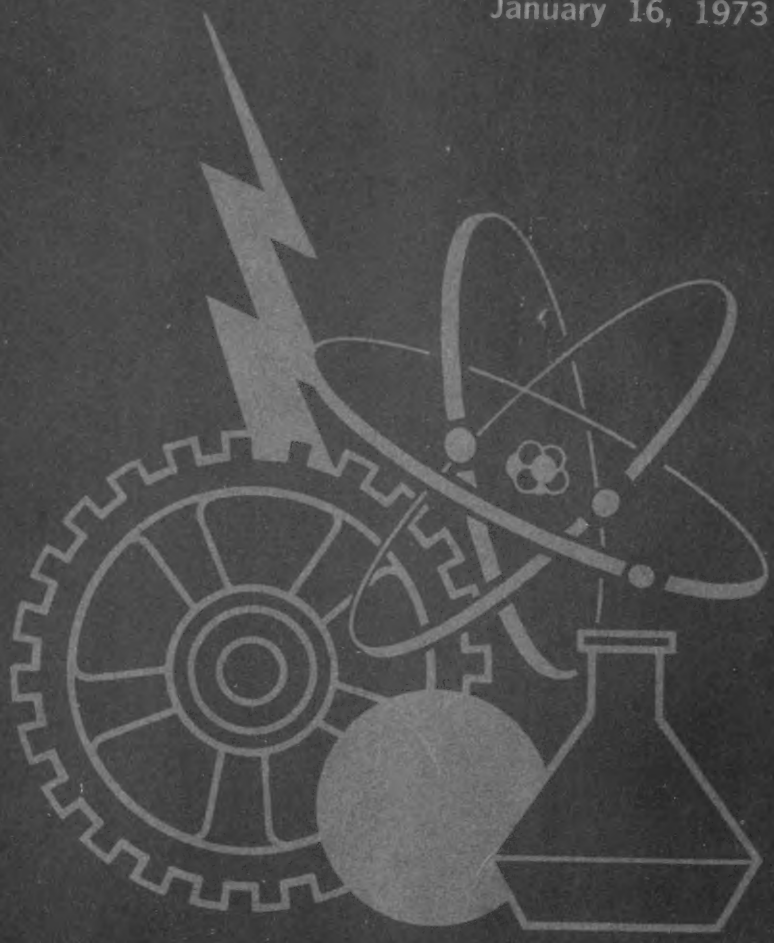
PATENTS

January 16, 1973



U. S. DEPARTMENT OF COMMERCE
Patent Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

January 16, 1973 Volume 906 Number 3

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PATENT OFFICE NOTICES

Effect of Closing of Patent Office on December 28, 1972

In view of the provisions of Executive Order 11693, issued Dec. 26, 1972, by President Nixon, providing for the closing of all Federal government agencies on Dec. 28, 1972 and for consideration of that day as falling within the provisions of 5 U.S.C. 6103(b), that day constitutes "a holiday within the District of Columbia" under the provisions of 35 U.S.C. 21. Any action due in the Patent Office on Dec. 28, 1972, is to be considered timely if taken on Dec. 29, 1972.

ROBERT GOTTSCHALK,
Dec. 27, 1972. *Commissioner of Patents.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,661,534, D. H. Keiser, Jr., SHEARING ACTION DEVICE, **filed** Dec. 9, 1966, D.C.N.J. (Newark), Doc. C–1225–66, *David Howard Keiser, Jr., doing business as Keiser Mfg. Co.* v. *J. Wiss & Sons Co.* Stipulation of dismissal of action, July 25, 1972.

2,734,028, B. Domogalla, KILLING ALGAE IN WATER WITH COPPER ALKANOLAMINE SALTS, **filed** July 25, 1972, D.C., E.D. Wis. (Milwaukee), Doc. 72–C–429, *Applied Biochemists, Inc., Donald E. Seymour and Donald H. Kunkel* v. *A. and V. Inc., Keith M. Anderson, Marjorie E. Vetter and Dennis L. Vetter.*

2,892,911, D. W. Crouch, VACUUM-TYPE CIRCUIT INTERRUPTER; **2,892,912,** Greenwood, Lee and Schneider, same; **3,246,979,** Lafferty, Barkan, Lee and Talento, VACUUM CIRCUIT INTERRUPTER CONTACTS; **3,263,162,** Lucke and Pearce, APPARATUS AND METHOD FOR MEASURING THE PRESSURE INSIDE A VACUUM CIRCUIT INTERRUPTER, **filed** Oct. 12, 1971, D.C., W.D.N.Y. (Buffalo), Doc. C–1971–452, *General Electric Company* v. *Westinghouse Electric Corporation.* Stipulation of dismissal filed on July 6, 1972.

2,892,912. (See 2,892,911.)

2,948,341, J. V. Fredd, OFFSET CIRCULATING NIPPLE AND TOOLS; **Re. 26,149,** Sizer, Cherry and Wilhoit, APPARATUS FOR CONTROLLING FLOW WITHIN A WELL, **filed** July 6, 1972, D.C., S.D. Tex. (Houston), Doc. 72–H–884, *Otis Engineering Corp.* v. *Camco, Inc.*

3,032,054, D. W. Irwin, PRESSURE REGULATOR CONSTRUCTION, **filed** Dec. 10, 1971, D.C., S.D. Iowa (Des Moines), Doc. 11–450–C–2, *Rockwell Mfg. Co.* v. *Fisher Controls Company, Inc.* Case dismissed, Aug. 2, 1972.

3,043,820, R. H. Krieble, ANAEROBIC CURING SEALANT COMPOSITION HAVING EXTENDED SHELF STABILITY; **3,046,262,** V. K. Krieble, ACCELERATED ANAEROBIC CURING COMPOSITIONS, **filed** Apr. 24, 1969, D.C. Conn. (New Haven), Doc. 13104, *Broadview Chemical Corporation* v. *Loctite Corporation.* Final judgment entered that Broadview's 14 sealant compositions, designated by the term Manaka, do not infringe Loctite's U.S. Letters Patent Nos. 2,895,950 and 3,043,820, May 10, 1972.

3,046,262. (See 3,043,820.)

3,092,799, A. R. Baker, APPARATUS FOR DETECTING COMBUSTIBLE GASES HAVING AN ELECTRICALLY CONDUCTIVE MEMBER ENVELOPED IN A REFRACTORY MATERIAL, **filed** July 14, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–1609–HP, *General Monitors, Inc.* v. *Mine Safety Appliances Company and National Research Development Corporation.*

3,094,302, A. L. Stauffer, WIRE SCREEN SEALING SYSTEM, **filed** July 25, 1972, D.C., M.D. Pa. (Scranton), Doc. C–72–377, *Continental Copper and Steel Industries, Inc.* v. *New York Wire Company.*

3,172,991, R. F. Arnoldy, FEEDER FOR WELDS, **filed** Aug. 4, 1972, D.C. Del. (Wilmington), Doc. 4442, *Stamicarbon, N.V. and Mathieu Bongard* v. *The Chemical Construction Corporation.*

3,174,608, K. Knickerbocker, COIN CONTROLLED NEWSPAPER VENDING MACHINE, AND COIN CONTROLLED MECHANISM ADAPTABLE THERETO, **filed** July 31, 1972, D.C., M.D. Fla. (Tampa), Doc. 72–431–C, *Leco Engineering and Machine, Inc.* v. *Karl Knickerbocker.*

3,246,979. (See 2,892,911.)

3,263,162. (See 2,892,911.)

3,271,858, J. J. Simmons, REMOVABLE DENTAL APPLIANCES AND METHODS OF MAKING SAME; **3,486,230,** same, DENTAL APPLIANCE; **Reg. No. 846,346,** Idea Development Company, SWING-LOCK, **filed** May 30, 1972, D.C., S.D. Tex. (Houston), Doc. 72–H–709, *Idea Development Company* v. *Nobilum of Texas, Inc.*

3,302,647, A. E. Marsan, SEALING PAD FOR A POST-SURGICAL DRAINAGE POUCH, **filed** July 27, 1972, D.C., E.D.N.Y. (Brooklyn), Doc. 72C1007, *Hollister Incorporated* v. *Atlantic Surgical Co., Inc.*

3,315,401, B. E. Wagner, SUPPORT FOR FISH-BITE DETECTING DEVICE, **filed** Oct. 14, 1968, D.C., S.D.N.Y., Doc. 68–C–4051, *Sidney O. Sampson* v. *Ampex Corporation.* Action dismissed and discontinued, Brieant, *J.*, June 15, 1972.

3,421,171, T. Tsuruzawa, BRUSH FOR CLEANING, **filed** May 31, 1972, D.C.N.J. (Camden), Doc. 930–72, *K-Tel International, Inc.* v. *Albert E. Price, Inc.* Consent judgment of permanent injunction, Aug. 4, 1972.

3,481,268, Price, Szilagyi and Quinto, GARBAGE COMPACTOR, **filed** Mar. 2, 1970, D.C.N.J. (Newark), Doc.C–248–70, *International Patents & Development Corp.* v. *Resources Control Corp. et al.* Stipulation and order of dismissal of action, July 31, 1972.

3,486,230. (See 3,271,858.)

3,514,834, E. G. Beck, Jr., METHOD FOR SECURING AN ELONGATED METAL MEMBER TO A FLAT METAL SHEET, **filed** Feb. 15, 1972, D.C. Conn. (New Haven), Doc. 14894, *Airtex Corporation* v. *Fine Line Bracing, Inc.* Stipulation for dismissal of complaint and counterclaim filed and order according'y, May 31, 1972.

3,538,389, Levesque and Harper, SUBELEMENT FOR ELECTRONIC CIRCUIT BOARD, **filed** Nov. 3, 1970, D.C., C.D. Calif. (Los Angeles), Doc. 70–2470–CC, *Circuit-Stik, Inc.* v. *Bishop Graphics, Inc. et al.* Judgment and ordered thereon that plaintiff's infringement claim is dismissed, that defendants' counterclaims are dismissed, July 26, 1972.

3,588,095, Ward, Ward and Bachmann, SUCTION TABLE SYSTEM FOR FEEDING OF WARPED SHEETS, **filed** July 20, 1972, D.C.N.J. (Newark), Doc. C–1256–72, *The Ward Machinery Company (formerly The Ward-Turner Machinery Company)* v. *The Langston Company.*

3,605,159, H. J. Girard, PIPE LINE PIG OR SWIPE, **filed** July 25, 1972, D.C., S.D. Tex. (Houston), Doc. CA 72–H–984, *Harry J. Girard* v. *Polly-Pig by Knapp, Inc.*

3,613,612, C. T. Kennedy, HIGH STRENGTH TUFTED PILE FABRIC, **filed** July 28, 1972, D.C., N.D. Ga. (Atlanta), Doc. 16931, *Thiokol Chemical Corporation* v. *E. T. Barwick and Amoco Fabrics Company.*

3,679,171, F. Baranowski, Jr., TORCH HANDLE, **filed** July 28, 1972, D.C. Mass. (Boston), Doc. CA 72–2337–LC, *Frank Baranowski, Jr.* v. *Wingaersheek Turbine Co., Inc.*

D. 224,505, F. Baranowski, Jr., TANK, PRESSURE REGULATOR AND TORCH, **filed** Aug. 3, 1972, D.C. Mass. (Boston), Doc. 72–2407–LC, *Frank Baranowski, Jr.* v. *Wingaersheek Turbine Co., Inc.*

Re. 26,149. (See 2,948,341.)

Reg. No. 846,346. (See 3,271,858.)

Certificates of Correction for the Week of Jan. 9, 1973

P.P. 3,180	3,639,491	3,662,580	3,671,276	3,676,484	3,679,862	3,682,943	3,685,139
P.P. 3,249	3,639,563	3,662,643	3,671,384	3,676,653	3,679,907	3,682,944	3,685,234
Re. 27,230	3,639,778	3,663,164	3,671,482	3,676,732	3,680,003	3,683,014	3,685,302
Re. 27,257	3,640,904	3,663,298	3,671,497	3,676,738	3,680,016	3,683,031	3,685,352
Re. 27,425	3,640,920	3,663,565	3,671,518	3,676,756	3,680,205	3,683,042	3,685,360
3,356,868	3,642,977	3,663,578	3,671,584	3,676,814	3,680,208	3,683,059	3,685,501
3,494,432	3,644,832	3,663,735	3,671,748	3,676,863	3,680,275	3,683,089	3,685,626
3,522,138	3,645,660	3,664,577	3,672,111	3,676,888	3,680,300	3,683,103	3,685,744
3,522,532	3,646,296	3,664,962	3,672,341	3,677,036	3,680,600	3,683,278	3,685,824
3,528,122	3,648,022	3,665,415	3,672,728	3,677,048	3,680,613	3,683,298	3,685,864
3,538,264	3,649,351	3,665,459	3,673,004	3,677,123	3,680,658	3,683,306	3,685,883
3,561,465	3,650,053	3,665,657	3,673,114	3,677,253	3,680,775	3,683,378	3,685,980
3,575,061	3,650,255	3,666,111	3,673,248	3,677,352	3,681,055	3,683,439	3,686,006
3,577,721	3,650,670	3,666,465	3,673,266	3,677,631	3,681,066	3,683,489	3,686,096
3,587,731	3,650,876	3,666,473	3,673,270	3,677,657	3,681,222	3,683,505	3,686,123
3,598,940	3,651,480	3,666,495	3,673,370	3,677,748	3,681,228	3,683,533	3,686,198
3,600,214	3,652,062	3,666,675	3,673,505	3,677,767	3,681,247	3,683,632	3,686,213
3,600,377	3,652,361	3,666,695	3,673,939	3,677,813	3,681,292	3,683,645	3,686,224
3,603,521	3,652,453	3,666,710	3,674,065	3,677,868	3,681,321	3,683,811	3,686,229
3,608,261	3,652,559	3,666,754	3,674,384	3,677,918	3,681,361	3,683,850	3,686,266
3,608,977	3,653,304	3,666,931	3,674,486	3,678,025	3,681,363	3,683,911	3,686,275
3,609,608	3,653,619	3,666,932	3,674,647	3,678,035	3,681,468	3,683,948	3,686,280
3,610,304	3,653,826	3,667,176	3,674,692	3,678,161	3,681,473	3,684,033	3,686,345
3,615,517	3,654,226	3,667,214	3,674,713	3,678,398	3,681,477	3,684,046	3,686,359
3,617,617	3,654,447	3,667,443	3,674,727	3,678,467	3,681,481	3,684,084	3,686,372
3,618,613	3,655,047	3,667,543	3,674,844	3,678,596	3,681,617	3,684,090	3,686,380
3,619,194	3,655,292	3,667,870	3,674,984	3,678,676	3,681,620	3,684,287	3,686,381
3,622,535	3,655,743	3,667,911	3,675,013	3,678,692	3,681,819	3,684,338	3,686,394
3,622,590	3,657,331	3,667,999	3,675,144	3,678,762	3,681,862	3,684,377	3,686,460
3,622,593	3,657,476	3,668,093	3,675,311	3,678,768	3,681,881	3,684,395	3,686,502
3,622,677	3,657,847	3,668,113	3,675,466	3,678,783	3,681,914	3,684,417	3,686,503
3,628,399	3,658,583	3,668,224	3,675,621	3,678,807	3,682,005	3,684,488	3,686,566
3,630,262	3,658,878	3,668,744	3,675,716	3,678,975	3,682,235	3,684,497	3,686,602
3,631,036	3,659,102	3,669,254	3,676,102	3,679,033	3,682,272	3,684,526	3,686,621
3,631,617	3,659,518	3,669,506	3,676,118	3,679,148	3,682,379	3,684,594	3,686,789
3,633,306	3,659,577	3,669,687	3,676,172	3,679,177	3,682,466	3,684,744	3,687,202
3,634,074	3,659,708	3,670,005	3,676,186	3,679,275	3,682,494	3,684,761	3,687,227
3,635,993	3,659,915	3,670,035	3,676,245	3,679,361	3,682,500	3,684,764	3,687,234
3,637,096	3,660,103	9,670,314	3,676,304	3,679,411	3,682,669	3,684,779	3,687,349
3,637,387	3,660,890	3,670,402	3,676,324	3,679,724	3,682,695	3,684,936	3,687,524
3,637,468	3,661,065	3,670,495	3,676,330	3,679,726	3,682,761	3,684,988	3,687,697
3,639,111	3,661,202	3,670,687	3,676,432	3,679,739	3,682,763	3,685,118	3,688,331
3,639,124	3,661,942	3,671,127	3,676,453	3,679,796	3,682,793	3,685,119	3,688,391

Disclaimer and Dedication

3,438,135.—*William M. Bense,* Barrington, R.I. UNIVERSAL JOINT GAUGE. Patent dated Apr. 15, 1969. Disclaimer and dedication filed Aug. 7, 1972, by the assignee, *Precision Universal Joint Corporation.*

Hereby disclaims and dedicates to the Public the terminal part of the term of said patent.

Dedications

3,007,620.—*Guy R. Laframboise* and *Merle P. Prater,* Vestal, N.Y. CARD PUNCHING DEVICE. Patent dated Nov. 7, 1961. Dedication filed Aug. 4, 1972, by the assignee, *International Business Machines Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

3,255,965.—*James R. Willson,* Greensburg, Pa. OVEN TEMPERATURE CONTROL SYSTEM. Patent dated June 14, 1966. Dedication filed June 13, 1972, by the assignee, *Robertshaw Controls Company.*

Hereby dedicates the remaining term of said patent to the Public.

3,308,871.—*Fred Richl,* Greensburg, Pa. PILOT BURNER MEANS OR THE LIKE. Patent dated Mar. 14, 1967. Dedication filed June 13, 1972, by the assignee, *Robertshaw Controls Company.*

Hereby dedicates to the Public the remaining term of said patent.

3,668,621.—*Carl L. Boyd,* Kingsport, Tenn. MULTIPLE ALTITUDE SIGNALING DEVICE. Patent dated June 6, 1972. Dedication filed Aug. 8, 1972, by the assignee, *Eastman Kodak Company.*

Hereby dedicates to the Public the portion of the term of said patent subsequent to July 13, 1972.

3,669,884.—*John H. Wright,* Elnora, N.Y. METHYL ALKYL SILICONE GREASE CONTAINING ZINC NAPHTHENATE. Patent dated June 13, 1972. Dedication filed Jan. 26, 1972, by the assignee, *General Electric Company,* consenting.

Hereby dedicates to the Public the portion of the term of the patent subsequent to Nov. 3, 1987.

Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,382,275, P. A. Barrett, Derivatives of Glyoxal Dithiosemi Carbazone, decided July 27, 1972, Interference No. 96,884, claims 1, 3, 4, 5, 9 and 10.

Patent No. 3,403,349, I. Wieder, Optically Pumped Maser and Solid State Light Source for Use Therein, decided Aug. 31, 1972, Interference No. 97,070, claims 2, 11, 14 and 15.

Patent No. 3,423,231, H. H. Lutzmann, Multilayer Polymeric Film, decided Nov. 22, 1972, Interference No. 97,404, claims 1, 2, 3 and 4.

Patent No. 3,454,981, T. W. Martinek, Shirring Apparatus and Resulting Product, decided July 27, 1972, Interference No. 97,410, claims 1 and 2.

Patent No. 3,478,014, S. Djokic and Z. Tamburasov, Erytromycin Oxime and 9-Amino-3-O-Clandinosyl-5-O-Desosaminyl-6,11,12 - Trihydroxy-2,4,6,8,10,12-Hexamethyl-Pentadecane-Olide, decided Nov. 21, 1972, Interference No. 97,825, claim 2.

Patent No. 3,602,934, B. B. Reed, Resilient Plug for Cleaning Pipelines, decided Oct. 4, 1972, Interference No. 97,910, claims 1, 2, 3, 4, 5, 6, 7, 8 and 9.

Disclaimers

Design No. 224,105.—*Michael A. Turturro,* Santa Monica, Calif. WATER FILTER OR SIMILAR ARTICLE. Patent dated July 4, 1972. Disclaimer filed Sept. 15, 1972, by the inventor.

Hereby enters this disclaimer to the claim of said patent.

3,050,877.—*Fernando M. Ronci,* Providence, R.I. REINFORCED HEEL AND TAP. Patent dated Aug. 28, 1962. Disclaimer filed Aug. 4, 1972, by the inventor.

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,155,949.—*Wilbur E. Tibbetts,* San Jose, Calif. TUNNEL ERASE MAGNETIC TRANSDUCER. Patent dated Nov. 3, 1964. Disclaimer filed Aug. 30, 1972, by the assignee, *International Business Machines Corporation.*

Hereby enters this disclaimer to claim 3 of said patent.

3,357,983.—*Earl Weener* and *John Herman Vander Ploeg,* Holland, Mich. PERYLENE PIGMENTS. Patent dated Dec. 12, 1967. Disclaimer filed Aug. 11, 1972, by the assignee, *Chemetron Corporation.*

Hereby enters this disclaimer to claim 1 of said patent.

3,476,970.—*Wallace Gillies, George K. Yamasaki,* and *J. C. Burger,* Horseheads, N.Y. HOLLOW CATHODE ELECTRON DISCHARGE DEVICE FOR GENERATING SPECTRAL RADIATION. Patent dated Nov. 4, 1969. Disclaimer filed Sept. 12, 1972, by the assignee, *Westinghouse Electric Corporation.*

Hereby enters this disclaimer to claim 1 of said patent.

3,482,708.—*Edward C. Levit,* Grand Rapids, and *Adrian R. Olree,* Caledonia, Mich. STACKING TRAYS. Patent dated Dec. 9, 1969. Disclaimer filed Oct. 25, 1972, by the assignee, *Steelcase, Inc.*

Hereby enters this disclaimer to claims 1, 2 and 6 of said patent.

3,485,018.—*Jacobus J. Beckering,* Bel Air, *Raymond J. Duran,* Lutherville, and *William R. Lessig III,* Baltimore, Md. LAWN MOWER DECK HOUSING. Patent dated Dec. 23, 1969. Disclaimer filed June 9, 1972, by the assignee, *The Black and Decker Manufacturing Company.*

Hereby enters this disclaimer to claims 12, 13, 15, 16–28, inclusive, and 30–35, inclusive of said patent.

3,498,906.—*Marcel J. P. Bogart,* Los Angeles, Calif. and *Hyman R. Davis,* Glen Ridge, N.J. QUENCH OIL RECOVERY SYSTEM. Patent dated Mar. 3, 1970. Disclaimer filed Nov. 13, 1972, by the assignee, *The Lummus Company.*

Hereby enters this disclaimer to claim 3 of said patent.

3,500,259.—*Harold Seidel,* Warren Township, Somerset County, N.J. FILTER CIRCUITS USING ALTERNATE OPEN- AND SHORT-CIRCUITED 3 db QUADRATURE HYBRIDS. Patent dated Mar. 10, 1970. Disclaimer filed June 14, 1972, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby enters this disclaimer to claims 1 and 3 of said patent.

3,507,207.—*Alan B. Rogers,* Palos Park, *Donald V. Schwall,* Glen Ellyn, and *Russell W. Posegate,* La Grange Park, Ill. SYSTEM FOR POULTRY INJECTION. Patent dated Apr. 21, 1970. Disclaimer filed Sept. 11, 1972, by the assignee *Armour and Company.*

Hereby disclaims the entire term of said patent.

3,544,273.—*Paul W. McConnaughey,* Pittsburgh, Pa. APPARATUS FOR SAMPLING AND ANALYZING BREATH. Patent dated Dec. 1, 1970. Disclaimer filed Aug. 23, 1972, by the assignee, *Mine Safety Appliances Company.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 7 and 8 of said patent.

3,593,036.—*Stephen P. F. Ma,* Santa Monica, and *Richard E. Sklar,* Los Angeles, Calif. MOSFET MOMENTARY SWITCH CIRCUIT. Patent dated July 13, 1971. Disclaimer filed Aug. 17, 1972, by the assignee, *Hughes Aircraft Company.*

Hereby enters this disclaimer to claim 5 only of said patent.

3,603,962.—*Bernard Joseph Lechner,* Princeton, N.J. COLOR DISPLAY FOR COMPUTER TERMINAL. Patent dated Sept. 7, 1971. Disclaimer filed Sept. 1, 1972, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to all claims of said patent.

3,644,802.—*Andrew G. F. Dingwall,* Somerville, N.J. RATIO-COMPENSATED RESISTORS FOR INTEGRATED CIRCUIT. Patent dated Feb. 22, 1972. Disclaimer filed Oct. 24, 1972, by the assignee, *RCA Corporation.*

Hereby disclaims the entire remaining term of said patent.

3,647,788.—*John Colin Clark,* Gerrards Cross, *Brian Richard Cowley,* Greenford, *Gordon Ian Gregory,* Chalfont St. Peter, England, and *James Kennedy,* Montrose, Angus, Scotland, and *Alan Gibson Long,* Greenford, England. CEPHALOSPORINS HAVING A 3-THIOETHER GROUP. Patent dated Mar. 7, 1972. Disclaimer filed Sept. 13, 1972, by the assignee, *Glaxo Laboratories Limited.*

Hereby enters this disclaimer to claims 3 and 4 of said patent.

3,664,111.—*Klaus Weber,* and *Fritz Urbahn,* Remscheid, Germany. MULTI-SPINDLE DRIVE MEANS FOR SPINNING AND TWISTING MACHINES. Patent dated May 23, 1972. Disclaimer filed Aug. 28, 1972, by the assignee, *Barmag Barmer Maschinenfabrik Aktiengesellschaft.*

Hereby enters this disclaimer to claims 1 and 6 of said patent.

3,666,015.—*William L. Livingston,* Sharon, Mass. FLUID FLOW CONTROL DEVICE. Patent dated May 30, 1972. Disclaimer filed Apr. 3, 1972, by the assignee, *Factory Mutual Research Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to July 13, 1988.

3,672,879.—*William J. Buehler,* Bethesda, Md. TiNi CAST PRODUCT. Patent dated June 27, 1972. Disclaimer filed Jan. 26, 1972, by the inventor.

Hereby disclaims the portion of the term of the patent subsequent to Sept. 22, 1987.

3,681,262.—*Robert J. Bouchard*, Wilmington, Del. COMPOSITIONS FOR MAKING ELECTRICAL ELEMENTS CONTAINING PYROCHLORE-RELATED OXIDES. Patent dated Aug. 1, 1972. Disclaimer filed Sept. 13, 1972, by the assignee, *E. I. du Pont de Nemours and Company*.

Hereby disclaims the portion of the term of the patent subsequent to June 8, 1988.

3,684,025.—*William L. Livingston*, Sharon, Mass. ADAPTIVE SPRINKLER HEAD. Patent dated Aug. 15, 1972. Disclaimer filed Apr. 10, 1972, by the assignee, *Factory Mutual Research Corporation*.

Hereby disclaims the portion of the term of the patent subsequent to Apr. 4, 1989.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF DECEMBER 26, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-09-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-02-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-12-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	9-01-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-01-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-03-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	1-03-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-03-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	9-14-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-08-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	4-27-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-08-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	1-03-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	2-01-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	2-22-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	10-04-71

Expiration of patents: The patents within the range of numbers indicated below expire during January 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,728,913 to 2,733,438, inclusive
Plant Patents..... Numbers 1,442 to 1,455, inclusive

REISSUES

JANUARY 16, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

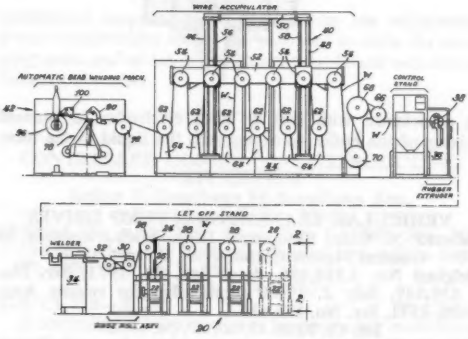
27,547
AUTOMATIC TIRE BEAD MAKING APPARATUS

Ernest U. Lang, Niles, Mich., assignor to National-Standard Company

Original No. 3,475,255, dated Oct. 28, 1969, Ser. No. 442,293, Mar. 24, 1965. Application for reissue May 7, 1970, Ser. No. 35,471

Int. Cl. B29h *17/32*

U.S. Cl. 156—422 25 Claims



A tire bead making apparatus including bead wire supply reels providing a plurality of continuous lengths of bead wire, and extruder for applying a coating to each of the bead wires, a variable speed bead winder having gripping means for gripping the leading ends of the wires and being rotatable to pull the wires through the extruder and wind the wires to form beads, a wire accumulator disposed between the extruder and the bead winder and having fixed and movable sheaves adapted to receive the bead wires thereon, and circuit control means operatively associated with the bead winder, the extruder and the accumulator and adapted to control movement of the movable sheaves of the accumulator in relation to the rotary speed of the bead winder to maintain generally constant preselected bead wire speed from the extruder.

27,548
METHOD OF REFINING COPPER

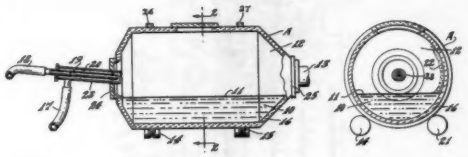
Albert W. Spitz, Wyncote, and Milton I. Schwab, Philadelphia, Pa., assignors to Trio Process Corporation, Philadelphia, Pa.

Original No. 3,432,289, dated Mar. 11, 1969, Ser. No. 541,448, Mar. 23, 1966. Application for reissue Feb. 19, 1971, Ser. No. 116,898

Int. Cl. C22b *15/06, 15/14*

U.S. Cl. 75—73 27 Claims

The method of producing blister or fire refined copper from impure copper by charging the impure copper into a rotary furnace, forming a molten metal bath of the impure copper inside the furnace, rotating the furnace to create a falling film of molten metal, subjecting the falling film of molten metal to an atmosphere of substantially pure oxygen whereby the said film is oxidized, and returning the oxidized film to the bath to undergo oxygen exchange with the impurities contained therein to form a slag layer.



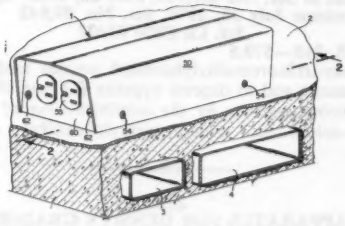
27,549
SINGLE AND DUAL SERVICE FITTINGS

Charles T. Flachbarth, 7 Meadowcrest, Parkersburg, W. Va. 26101; Robert W. Hadfield, 1584 Lois, Belpre, Ohio 45714; and William H. Harding, 1337 25th St., Parkersburg, W. Va. 26101

Original No. 3,514,525, dated May 26, 1970, Ser. No. 767,300, Oct. 14, 1968. Application for reissue May 15, 1971, Ser. No. 153,299

Int. Cl. H02g *3/10*

U.S. Cl. 174—49 9 Claims



Service fittings for use with electrical underfloor distribution systems to provide for power and/or communication service connections, the fittings of the various types having basic components with corresponding structural characteristics which adapt the same to be fabricated by extrusion techniques and assembled together in the same manner.

27,550
TORQUE RELEASE AND SHUT-OFF MECHANISM FOR PNEUMATIC TOOLS

Kenneth R. Bangerter, 120 Columbia St., Ithaca, N.Y. 14850

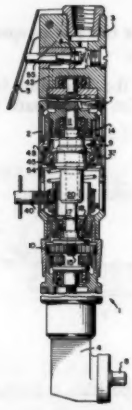
Original No. 3,442,362, dated May 6, 1969, Ser. No. 664,777, Aug. 31, 1967. Application for reissue Jan. 14, 1971, Ser. No. 106,611

Int. Cl. F16d *43/20;* F01c *21/12*

U.S. Cl. 192—.34 18 Claims

A pneumatic power wrench having a cone clutch with a "locking taper," a torque sensing means and a motor

exhaust shut-off valve adapted to close automatically in response to the torque sensing means. The closing of the



shut-off valve simultaneously opens the cone clutch to disengage the tool motor from its spindle and to stop the tool motor.

27,551
β-ALKOXY-TRIFLUOROMETHYLPHENALKYL-AMINES

John A. Faust, Solvang, Calif., and Melville Sahyun, 102 E. Pueblo St., Santa Barbara, Calif.; said Faust assignor to Said Melville Sahyun, doing business as Sahyun Laboratories, Santa Barbara, Calif.

No Drawing. Original No. 3,459,803, dated Aug. 5, 1969, Ser. No. 666,457, Sept. 8, 1967, which is a continuation-in-part of Ser. No. 467,759, June 28, 1965. Application for reissue July 28, 1970, Ser. No. 59,042
Int. Cl. C07c *93/02*
U.S. Cl. 260—570.6 **7 Claims**

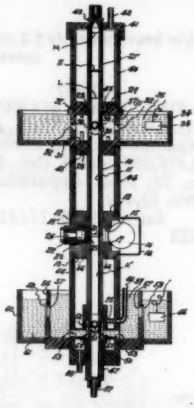
Alkoxy-trifluoromethylphenalkyl amines useful to reduce nausea and to depress appetite [.] *and the process of reducing appetite by the administration of a lower-alkoxy-substituted trifluoromethylphenalkyl secondary amine.*

27,552
APPARATUS FOR DENSITY GRADIENT ELECTROPHORESIS

Robert W. Allington, 1551 Ridgeway Road, Lincoln, Nebr. 68506

Original No. 3,453,200, dated July 1, 1969, Ser. No. 552,905, May 25, 1966. Application for reissue May 10, 1971, Ser. No. 142,084
Int. Cl. B01k *5/00*
U.S. Cl. 204—301 **24 Claims**

Apparatus for separating and isolating the various solutes in complex mixtures by density gradient electrophoresis includes: a tube made of electrical insulating material for receiving a density gradient liquid, means including a reversible pump for pumping a displacing liquid into and out of the tube to position the density gradient liquid within a predetermined portion of the tube, a light passageway through the tube, a light source positioned to transmit light rays through the light passageway, means including a light transducer responsive to the concentration of liquid in the tube and positioned to receive the light rays transmitted through the light passageway, a light filter interposed between the light passageway and light transducer, and means establishing an electric field across axially spaced points within the tube. The means for establishing the electric field consist of electrodes connected to a source of D.C. current and immersed in buffer solutions in communication with the liquid in the tube; semi-permeable membranes being used

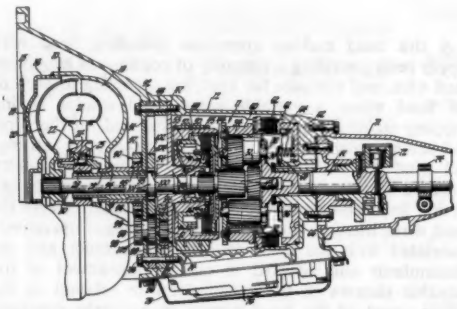


in association with one or both electrodes to prevent mixing of the buffer solutions with the liquid in the tube.

27,553
VEHICULAR TRANSMISSION PUMP DRIVES

Edward N. Cole, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Original No. 3,554,056, dated Jan. 12, 1971, Ser. No. 838,549, July 2, 1969. Application for reissue Aug. 26, 1971, Ser. No. 175,413
Int. Cl. F16h *47/00, 47/04, 47/08*
U.S. Cl. 74—730 **2 Claims**



A vehicular transmission having a hydraulic pump driven by the transmission input through a one-way drive when the input is powering the transmission and driven by the transmission output through a one-way drive when the output is powering the transmission.

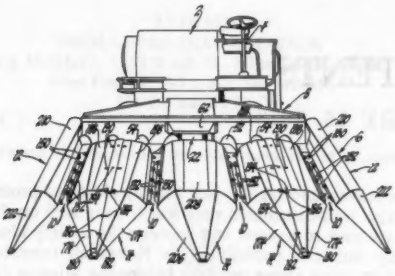
27,554
CORN HARVESTER

Robert Ashton, Islington, Myron Leroy Gullickson, Scotland, and James G. Butler, Islington, Ontario, Canada, assignors to Massey-Ferguson Limited, Toronto, Ontario, Canada

Original No. 3,271,940, dated Sept. 13, 1966, Ser. No. 328,324, Dec. 5, 1963. Application for reissue June 9, 1969, Ser. No. 28,993
Int. Cl. A01d *45/02*
U.S. Cl. 56—105 **10 Claims**

Combine corn head attachment having a plurality of corn snapping units mounted on the attachment with some

of the units being mounted so that they can be laterally adjusted with respect to adjacent units to accommodate variable spaced crop rows, the mounting providing for



continuous support of the units during the adjustment. Power transmitting means are provided to drive the snapping units and which accommodate the lateral adjustment between the units.

27,555

CONTROLLED INK-JET COPY-REPRODUCING APPARATUS

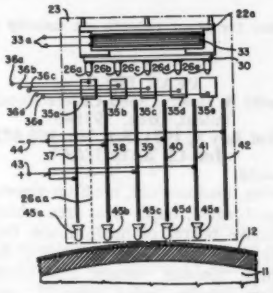
Arthur V. Loughren, 22 Broadlawn Ave., Great Neck, N.Y. 11024

Original No. 3,404,221, dated Oct. 1, 1968, Ser. No. 500,947, Oct. 22, 1965. Application for reissue Sept. 29, 1970, Ser. No. 76,388

Int. Cl. H04n 9/02

U.S. Cl. 178—5.2 R **21 Claims**

A controlled ink-jet apparatus for producing multi-color reproduction of a subject copy comprises a photoelectric scanner for developing video signals representative of the red, green, and blue components of the signal picked up by the scanner. The copy is reproduced on a record sheet disposed on a drum rotated in synchronism with the scanner. For each color component there is provided a set of ink jets disposed on a head which scans the record sheet. Each set comprises a plurality of ink jets or nozzles. The jets from these nozzles pass through individual electric charging cylinders which individually charge the



ink droplets emerging from the jets and these droplets then traverse reflecting fields which direct the ink drops either to the record sheet or to the drain. By supplying inks of different optical densities to the several jets of each set and by selectively deflecting ink from predetermined jets to the drain, the optical density of each ink spot on the record can be controlled over a wide range of values to produce effectively a continuous tone color reproduction of the original copy.

PLANT PATENTS

GRANTED JANUARY 16, 1973

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,291
PEAR TREE
David B. Lowry, 5500 Colver Road, Talent, Oreg. 97540
Filed July 8, 1971, Ser. No. 160,872
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—36 **1 Claim**

A fast-growing, medium-size, medium-vigorous, upright, tall, open, vase-formed, hardy pear tree which is a regular and productive bearer of medium-size fruit, of good market quality, having red skin and white flesh; the red skin being thick, smooth, waxen, and glossy, and the flesh being firm, tender, juicy, subacid, and distinctly white.

3,292
LEMON-LIME TREE
Herman Arthur Lucerne, 633 SW. 2nd St., Florida City, Fla. 33030
Filed June 16, 1971, Ser. No. 153,905
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—45 **1 Claim**

A lemon-lime combination resembling most closely the Perrine lemon (*Citrus aurantifolia* c. Mexican ♀ × Citrus limon c. Genoa ♂) but bearing fruit distinguished therefrom by a calyx end evenly rounded, sometimes slightly ribbed and furrowed, rarely slightly necked, a stylar end evenly rounded, very faintly nippled, and with a deciduous style, and often producing seedless fruit.

3,293
ALMOND TREE
Clarence H. Sauret, Paso Robles, Calif., assignor of a fractional part interest to Richard K. Sauret, Paso Robles, Calif.
Filed June 7, 1971, Ser. No. 150,855
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—30 **1 Claim**

An almond tree characterized by large size, vigorous growth, medium density, abundant foliage with medium-size ovate leaves, and regular and heavy production of small, well-distributed nuts easy to harvest, hull, and process; the variety blooming, pollinating, and harvesting with the Nonpareil (unpatented); the nuts, of good quality and good flavor, averaging 370 per pound; the percentage of kernel to nut averaging 66%; and the kernels averaging 35.5 per ounce.

3,294
ALMOND TREE
Clarence H. Sauret, Paso Robles, Calif., assignor of a fractional part interest to Richard K. Sauret, Paso Robles, Calif.
Filed June 7, 1971, Ser. No. 150,854
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—30 **1 Claim**

An almond tree characterized by large size, vigorous and dense growth, abundant foliage with medium-size ovate leaves, and regular and heavily clustered production of large, well-distributed nuts which hang well on the tree and are easy to harvest and process; the variety blooming closely with and pollinating the Nonpareil (unpatented) and harvesting about ten days before the Mission (unpatented); the nuts, of good quality and good flavor, averaging 300 per pound; the percentage of kernel to nut averaging 60%; and the kernels averaging 29.3 per ounce.

3,295
GRAPEVINE
John M. Garabedian, Fresno, Calif., assignor to Superior Farming Company
Filed May 28, 1971, Ser. No. 148,246
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—47 **1 Claim**

A vigorous, horizontally growing, hardy grapevine which is a regular and productive bearer of medium-size clusters of black, seedless grapes which ripen about seven to ten days earlier than the Black Monukka (unpatented); the individual berries of the present variety of grapevine being characterized, in comparison to said Black Monukka, by more purplish-black to black color, more ovoid-elongated shape, larger diameter, tougher and thicker skin, more looseness in the cluster, and vestigial seeds which are a darker brown color and usually having a fiber remaining attached to the seed beak.

3,296
DOGWOOD TREE
Mary B. Wakefield, 1465 Brush Hill Road, Milton, Mass. 02186
Filed Apr. 30, 1971, Ser. No. 138,968
Int. Cl. A01h *5/12*
U.S. Cl. Plt.—51 **1 Claim**

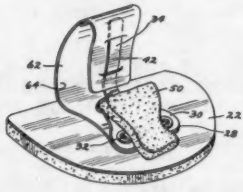
1. A new and distinct variety of dogwood tree of the Japanese dogwood type, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a fastigiate and distinctly upright habit of growth, with the trunk dividing, beginning well above the ground, and each division continuing to ascend and bearing numerous short horizontal branches which turn upward at their tips, distinctive and attractive, large white flowers, each having four broadly overlapping bracts, with the two upper bracts being slightly narrower than the two lower bracts, and the flowers being borne all along the numerous horizontal branches which are so densely twigged that the flowers are quite close together and appear in vertical series as narrow white tiers which is quite unusual and attractive, attractive large fruit of somewhat blocky shape and which are green in color at the beginning, then become yellow, and finally turn red quite early as the fruiting season progresses, excellent hardiness to at least —20° F. without injury, and especial suitability for accent use along sidewalks and near buildings, and for street, park, patio and garden plantings.

PATENTS

GRANTED JANUARY 16, 1973

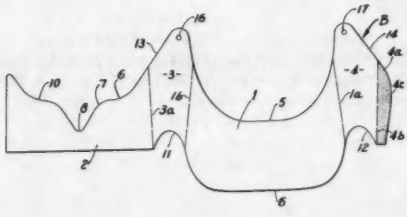
GENERAL AND MECHANICAL

3,710,391
SHOULDER STRAP RETAINER
Walter J. McGlynn, 3335 N. 6th St., Minneapolis, Minn.
Filed Feb. 19, 1971, Ser. No. 116,856
Int. Cl. A41d *13/00*
U.S. Cl. 2—2 **4 Claims**



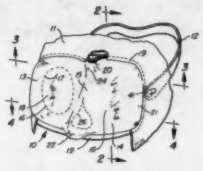
A shoulder strap retainer consists of a weight distributing pad to be placed on the user's shoulder; a strap holding clip having a base plate riveted to the pad with a hold-down arm pivotally mounted to the base plate; and a cushion of soft, relatively frictional, material bonded to the base plate so as to come between the base plate and the hold-down arm. The base plate is substantially flat, and the hold-down arm is curved to include an enlarged shoulder strap encompassing portion in adjacent relationship to the pivotal mounting of the hold-down arm to the base plate, and a strap contacting end portion in overlying relationship to the cushion. The encompassing portion of the arm and the pivotal mounting of the arm to the base plate prevents the shoulder strap from sliding downwardly off the user's shoulder and the strap contacting portion of the arm combined with the frictional cushion tends to prevent the shoulder strap from riding upwardly or downwardly from the retainer.

3,710,392
ANTI-GLARE SUNSHADE
Gerald H. Morris, Jr., Lithonia, Ga., assignor to Larry D. Hutton and Paul W. Schlotterbeck, Newport Beach, Calif.
Filed Aug. 6, 1970, Ser. No. 61,755
Int. Cl. A61f *9/00*
U.S. Cl. 2—12 **2 Claims**



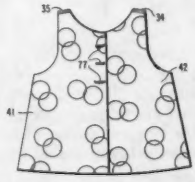
A anti-glare sunshade composed of a foldable flat blank and having top, bottom and side walls shaped to conform to the face and head of a wearer, the walls extending outwardly to shade the wearer's eyes against direct or reflected sun light. The inside surfaces of the sunshade are non-reflective.

3,710,393
HEADGEAR
Donald J. Douglas, 10 Glasgow Road, White Bear Lake, Minn.
Filed Nov. 11, 1971, Ser. No. 197,660
Int. Cl. A61f *9/00*
U.S. Cl. 2—14 W **35 Claims**



The headgear comprises a substantially semi-rigid organic plastic sheath structure adapted to be placed in spaced relationship over the eyes and nose of an individual wearing the same, with perimeter portions of the sheath structure lying peripherally outward from the wearer's eyes and nose. The sheath has lateral eye accommodating portions with transparent eye-vision areas. A nose accommodating portion is located intermediate the eye portions. A nostril breath outlet is located at a peripherally outward portion of the sheath other than along the lower edge thereof. Passage means carries nostril breath of a wearer of the sheath from the nose portion to the outlet without substantial direct nostril breath communication into the space between the wearer's eyes and the innermost surfaces of the sheath structure at the eye-vision areas. At least the eye-vision areas are preferably formed by using outer and inner plate members, with an intervening insulation space therebetween. The passage means for carrying nostril breath may be grooved or U-shaped, or may comprise a conduit. A bonnet member is preferably fixed to the sheath; and the passage means of the sheath permits breathing of air underneath the bonnet. Several optional features are included for headgear for water or air environmental use.

3,710,394
METHOD OF MAKING A REVERSIBLE GARMENT
Gladys Trice, Route 1, Barnesville, Ga.
Filed July 28, 1971, Ser. No. 166,728
Int. Cl. A41d *1/22*
U.S. Cl. 2—74 **2 Claims**

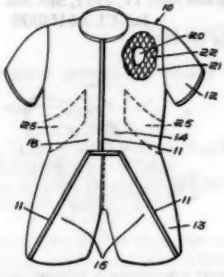


A method of making a reversible, sleeveless outer body garment wherein the inner garment ply and the outer garment ply are placed in confronting, face-to-face relationship and externally stitched together along their edges, leaving openings in the stitching at the ends of the shoulder straps and along one edge of the garment. The garment is pulled right side out through the side edge opening, and the side edge opening is then pulled back through a shoulder strap opening and sewn closed. The shoulder straps are then sewn together to complete the eye appealing reversible garment which shows no seams.

3,710,395
AIR DISTRIBUTION GARMENT

Leo A. Spano, Cumberland, and Vincent D. Lacono, Rumford, both of R.I., assignors to The United States of America as represented by the Secretary of the Army

Filed Oct. 29, 1971, Ser. No. 193,784
Int. Cl. A41b 9/00
U.S. Cl. 2—78 **10 Claims**

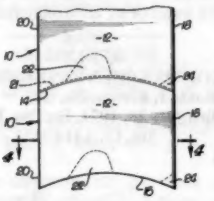


An air distribution garment adapted to enclose the torso of the wearer consisting of a layer of an air-permeable, stretchable, compression-resistant, spacer fabric enclosed between layers of stretchable, air-permeable, fabric, having air inlet openings on said garment communicating with manifolds within the garment and through which air is caused to flow over the back and chest portions through the spacer fabric to remove excess heat and moisture from the torso to maintain the body in thermal balance.

3,710,396
DISPENSABLE HEAD COVERING

Barbara L. Tomlinson, 812 S. Burnside Ave., Los Angeles, Calif.

Filed Jan. 4, 1971, Ser. No. 103,635
Int. Cl. A42b 1/22
U.S. Cl. 2—197 **3 Claims**



A dispensable head covering for a person's head for dispensing from a box or roll, having perforations or scoring separating one unit from the other, each of the units having perforated or scored ear tab portions, and formed from two layers of stretchable material connected at their top edges to each other, with optional heat sealed front edges to accommodate various head sizes.

3,710,397
MAN'S BRIEF

Toshio Tsujimoto, Sakaishi, Japan, assignor to Fukusuke Kabushiki Kaisha, Sakaishi, Osakafu, Japan

Filed June 29, 1970, Ser. No. 50,654
Claims priority, application Japan, June 30, 1969, 44/62372; June 30, 1969, 44/62373; July 1, 1969, 44/62572; July 1, 1969, 44/62573
Int. Cl. A41b 9/02
U.S. Cl. 2—224 A **1 Claim**

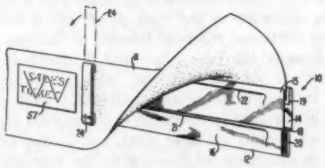
The present invention relates to a man's brief and more particularly to a brief which comprises in a front body formed by elastic fabrics which easily expand and contract in a vertical direction, a back body formed by elastic fabrics which easily

expand and contract in a horizontal direction, and wherein elastic tape is sewn to its downsides.

3,710,398
SYSTEM OF MAKING WAISTBANDS WITH CRIMPED BELT LOOPS, LABELS AND TICKETS

John P. Hunter, Jr., Atlanta, and Erie George Huddleston, Monroe, both of Ga., assignors to Oxford Industries, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 851,986, Aug. 21, 1969, Pat. No. 3,562,817. This application Dec. 14, 1970, Ser. No. 97,489
Int. Cl. A41d 1/06
U.S. Cl. 2—236 **15 Claims**

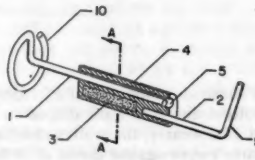


A method of making waistbands for pants and other garments wherein a series of waistband panels are joined together in end-to-end relationship to form a continuous series of waistband panels, a continuous band of facing material is fed into abutting relationship with one edge of the series of panels and is continuously rocaped to the series of panels. The panels are marked and belt loop material is fed in a continuous strip toward the panels, cut to proper length, the lengths are crimped and folded at their ends and sewn to the panels in positions corresponding to the markings. Labels are sewn to the facing material at positions corresponding to the ends of the panels, sales tickets are basted to waistband panels, the panels are separated and the facing material is cut at positions adjacent the ends of the waistband panels alternately with a straight cut extending across the facing material and with a Y-shaped cut to remove a portion of the facing material.

3,710,399
OSSICLE REPLACEMENT PROSTHESIS

Herbert N. Hurst, 1199 West 1050 North, Provo, Utah

Continuation-in-part of Ser. No. 756,971, Sept. 3, 1968, abandoned. This application June 23, 1970, Ser. No. 57,834
Int. Cl. A61f 1/24
U.S. Cl. 3—1 **1 Claim**



A prosthesis for surgically replacing the three bones of the middle ear when said bones are defective or missing. The

prosthesis consists basically of two struts held mechanically and loosely in close proximity and parallel to and partly overlapping each other in such a manner as to allow their combined length to adjust freely to movements of the tympanic membrane without tearing or breaking connections to delicate tissues, while maintaining continuous transmission of sound oscillations from the tympanic membrane to the oval window. The transmission of sound oscillations between the struts is accomplished by a magnetic couple. The proximal strut is attached to the tympanic membrane and the distal strut is attached to the oval window using established surgical procedures. Some such procedures are briefly described elsewhere in this specification.

3,710,400

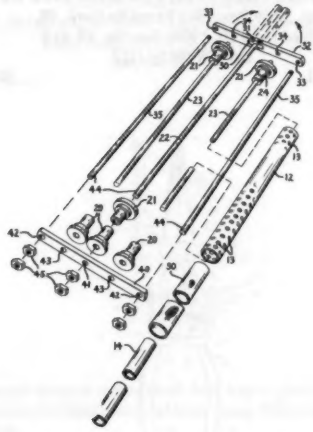
GRAFT MEMBER GROWN IN A LIVING BODY

Charles H. Sparks, 3725 S.E. Martins St., Portland, Oreg.

Division of Ser. No. 823,287, May 9, 1969, Pat. No. 3,625,198, which is a continuation-in-part of Ser. No. 655,838, July 25, 1967, Pat. No. 3,514,791. This application Aug. 30, 1971, Ser. No. 175,914

Int. Cl. A61f *1/24*

U.S. Cl. 3—1 **4 Claims**



A cluster of tubular tissue dies in a die holder is inserted lengthwise in a stab wound. Each die tube is perforated and contains a cloth tube spaced outward from a central mandrel in the tube. Ingrowth of tissue encapsulates the cloth tube and fills the space between the cloth tube and mandrel forming a graft tube containing the cloth tube as a reinforcing member adjacent its outer surface and remote from the lumen formed by the mandrel. The die cluster containing the graft tubes is removed lengthwise from a second stab wound adjacent one end of the cluster.

3,710,401

ELONGATED INFLATABLE SEAL AND CONTAINMENT DEVICES FOR USE SEALING JOINTS BETWEEN PERPENDICULARLY DISPOSED STRUCTURAL MEMBERS AND COPLANAR STRUCTURAL MEMBERS

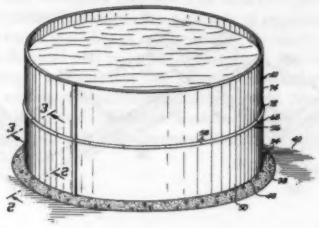
Adam D. Goettl, 4960 East Palomino Rd., Phoenix, Ariz.

Filed Sept. 14, 1970, Ser. No. 71,961

Int. Cl. E04h *3/16, 3/18*

U.S. Cl. 4—172.19 **12 Claims**

An elongated seal and containment devices for use therewith are disclosed, the seal is provided with feathered edges formed on both ends thereof to allow overlapped insertion within containment devices which positions and retains the seal in contiguous engagement with the joint between adjacent structural members. The seal is flexible and inflatable so that when pressurized it will conform to the shape of the containment devices and exert sealing pressure on the structural members. The seal and containment devices for use



therewith are particularly adapted for use in fluid containing structures such as storage tanks, swimming pools and the like.

3,710,402

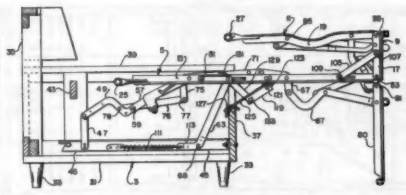
SOFA BED FOLDING FIXTURE

Paul W. Eakins, Saint Louis, Mo., assignor to Foster Brothers Manufacturing Company, St. Louis, Mo.

Filed June 10, 1971, Ser. No. 151,758

Int. Cl. A47c *17/14*

U.S. Cl. 5—13 **4 Claims**



A folding fixture for a sofa bed having a plurality of sections pivotally connected together end-to-end with each section comprising a pair of bars at opposite sides of the fixture and with a bedspring for supporting a mattress extending between and connected to the side bars. The fixture is foldable so the sections along with the mattress and the bedspring may be disposed in the sofa in a retracted position wherein one of the sections constituting a body section extends generally horizontally bottomwise of the sofa. Means is provided extending between the side bars of the body section adjacent its rearward end for supporting the bedspring when the fixture is in its stated retracted position. This bedspring support means is carried by linkage means operable by the folding and unfolding of the fixture for moving the bedspring support means between a lowered retracted position permitting the bedspring to yield downward under the weight of a user when the fixture is unfolded for use as a bed and a raised position relative to the body section contiguous to the bedspring holding it up against downward yielding when the fixture is retracted for use as a sofa.

3,710,403

SEATING UNIT IN AN ARTICLE OF FURNITURE

Urban A. Weidner, Park Ridge, Ill., and Nicholas Charlich, Kaleva, Mich., assignors to Mak-Kraft Creations, Inc., Chicago, Ill.

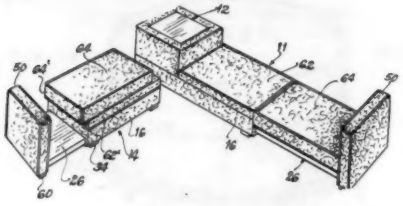
Filed June 30, 1971, Ser. No. 158,164

Int. Cl. A47c *17/14*

U.S. Cl. 5—18 **5 Claims**

A seating unit in the form of a sectional sofa, couch or the like, which has a slidable and extendible member which when

in retracted position is hidden from view to give the outward appearance of a conventional article of furniture but which

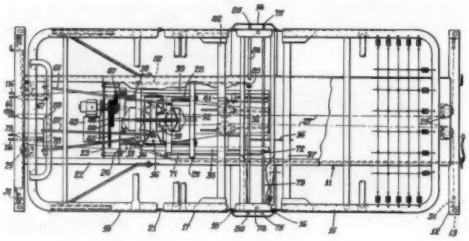


when extended increases the length of same to provide increased seating capacity or permits its use as a bed.

3,710,404
ELECTRIC HOSPITAL BED

Warren J. Peterson, Two Rivers, Wis., assignor to Joerns Furniture Company, Stevens Point, Wis.

Filed April 15, 1971, Ser. No. 134,197
Int. Cl. A61g 7/00, 7/10
U.S. Cl. 5—68 **14 Claims**



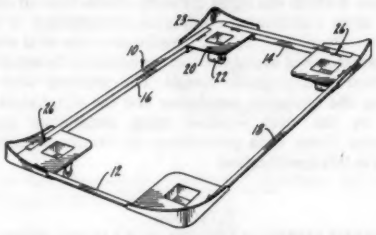
Electric hospital bed with articulated spring having Hi-Lo, head and knee function drive means with respective manually operable control members selectively movable from neutral in either of two directions and a normally neutral control unit operable in response to each control member first to move a gear selector to effect driving connection for the selected bed function and thereafter to close one or the other of two switches to initiate motor operation for either up or down bed function movements, with means operable automatically upon release of an actuated head or knee control member to return the parts manually operated thereby to neutral position and "NO-WAIT" means for latching the Hi-Lo control member and parts manually actuated thereby in operative position following manual actuation and release and automatically operable in response to movement of the bed into its highest or lowest positions to return the Hi-Lo member and mechanisms actuated thereby to neutral positions, and simplified lockout means for selectively preventing operation of the head or knee control members, together with simplified Trendelenberg control means.

3,710,405
BED CARRYING FRAME

Edwin B. Watts, Lombard, Ill., assignor to Sealy, Incorporated, Chicago, Ill.

Filed Oct. 27, 1971, Ser. No. 193,130
Int. Cl. A47c 19/02
U.S. Cl. 5—201 **10 Claims**

A bed carrying frame comprises corner members and rails readily assembled and disassembled. The corner member has a channel to receive the rail and a recess to receive a locking means attached to the rail. The locking means has walls which engage corresponding walls of the recess to wedge the locking

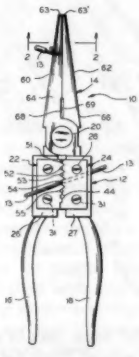


means and rail in the recess and channel and thereby preclude longitudinal and transverse movement of the rail with respect to the corner member.

3,710,406
COMBINATION WIRE STRIPPER AND PLIER DEVICE

Joe H. Stanford, 3249 Pearl St., Franklin Park, Ill.

Filed Nov. 10, 1970, Ser. No. 88,415
Int. Cl. H02g 1/12
U.S. Cl. 7—5.1 **10 Claims**



A combination wire stripper and plier device comprising a pair of handle members having cutting plates mounted at the upper ends thereof. When the handles are in a closed position, the cutting plates mesh together and form a plurality of substantially circular knives, each being suitable for cutting and stripping insulation from a predetermined size of electrical wire.

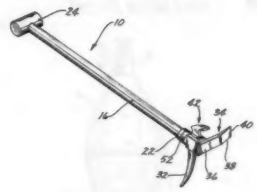
3,710,407
COMBINATION TOOL

Ronald E. Reid, Ankeny, Iowa, assignor to Auto Safety, Inc., Des Moines, Iowa

Filed Sept. 28, 1970, Ser. No. 76,655
Int. Cl. B25b 7/22; B67b 7/44
U.S. Cl. 7—8.1 **3 Claims**

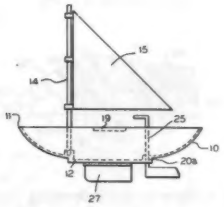
A combination tool for opening wrecked vehicles and the like comprising a first elongated tool member having first and second ends with a bore extending thereinto from one end thereof. A second elongated tool member is selectively slidably received in the bore of the first tool member and has a tool head portion at its outer end. The tool head portion includes a pry bar means, cutting means and spike means mounted thereon. The first tool member is selectively slidably movable with respect to the second tool member to effectively

extend the length of the tool to provide additional leverage for the tool head portion when the same is being used to open a wrecked vehicle. The first tool member includes a hammer head at one end thereof which may be used to strike the tool



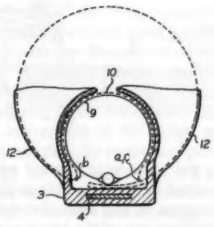
head portion when the tool members are separated to create additional impact force to the tool head portion. The first tool member may also be struck against the second tool member by slidably moving the same with respect to each other to aid the cutting means in penetrating metal materials.

3,710,408
CIRCULAR WATERCRAFT
Hugh E. Sorenson, 3818-AN-37th Street, Milwaukee, Wis.
Filed Aug. 20, 1970, Ser. No. 65,440
Int. Cl. B63h *9/04*
U.S. Cl. 9—1 **6 Claims**



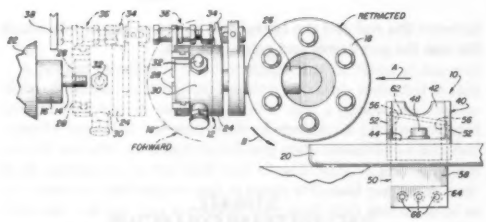
A saucer shaped water craft hull has a plurality of sockets which make it readily adaptable to many different uses and applications.

3,710,409
LINEAR INFLATABLE MODULE DEVICE
William M. Davidson, Box 74, Mountain Lakes, N.J.
Filed March 30, 1970, Ser. No. 23,591
Int. Cl. B63c *9/08*
U.S. Cl. 9—312 **4 Claims**



In combination with a load supporting member, such as a cable, strap, belt, or the like, a linear inflatable buoyancy device, or plurality thereof, of elongated, generally cylindrical form that conforms in shape with and may be made an integral part of said load supporting member, comprising a flexible, expansible bladder, contained within a flexible, expansible, retaining sleeve, which in turn is folded within and protected by a flexible outer casing, in combination with a gas source, gas delivery means and actuating means for release of said gas to inflate said inflatable module. The structure permits use of the same inflatable module for a variety of applications by interconnecting a plurality of said modules, by means of conventional mechanical and pneumatic couplings and fasteners, in configurations suitable for life saving, boat safety, mooring and other surface and sub-surface marine uses. Means are also provided within said inflatable module for adjustment of the amount and location of buoyancy obtainable upon inflation thereof.

3,710,410
DIE ACTUATOR
Alfred C. Andreasen, Oak Park, Ill., assignors to New Way Products Company, Franklin Park, Ill.
Filed Sept. 7, 1971, Ser. No. 178,285
Int. Cl. B23g *1/02, 1/44, 5/12*
U.S. Cl. 10—89 R **6 Claims**

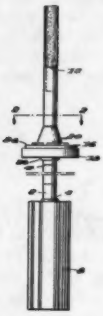


A die actuator for moving an operating lever of a threading die on automatic screw machines, and the like, having a turrethead indexable through a plurality of different work positions and slidable along a work axis toward and away from the workpiece. The die actuator comprises a base which is fixedly secured to the bed of the automatic screw machine and defines vertical guide means. An actuator slide is mounted for vertical sliding movement on the base in said guide means between an elevated, upper position and lower, rest position. Lift means extends outwardly of the slide into the path of travel of the operating lever on the threading die as the die moves during indexing of the turret. ENgagement between the lift means and the die operating lever during turret indexing causes the lever to close the die and move the thread chasers into position ready for cutting threads on a workpiece. When the head is subsequently moved forward toward the workpiece, the operating lever moves out from under said lift means and the actuator slide drops downwardly to the rest position out of the way of the turrethead and any of the other tools mounted thereon.

3,710,411
GUN CLEANING DEVICE
Jose H. Murguiondo, 32 East Main St., Middletown, Md.
Filed May 11, 1971, Ser. No. 142,246
Int. Cl. F41c *31/02*
U.S. Cl. 15—104.16 **7 Claims**

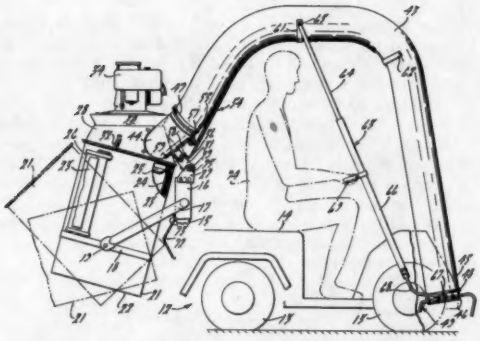
A gun cleaning device is formed of a rod having at one end a handle and at the other end a cleaning member or a holder therefor. The handle is slidable through a hole in a permanent magnet. On the face of the magnet directed towards the clean-

ing member there are laterally extending fingers of a non-metallic material such as rubber or plastic to prevent contact



between the rod and the barrel and an extending nipple which fits into the gun barrel and guides the rod.

3,710,412
VACUUM TRASH COLLECTOR
John R. Hollowell, 3567 Greenfield, Dearborn, Mich.
Filed June 11, 1971, Ser. No. 152,223
Int. Cl. A47l 9/00
U.S. Cl. 15—340 **22 Claims**

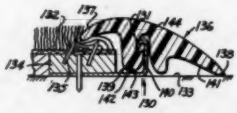


A trash collector mountable on a cart. The collector comprises a pivoted cylindrical bin having a hinged lid surmounted by a vacuum blower. A flexible hose of inverted U shape has a nozzle at its outer end, the inner end entering tangentially into the lid. The hose is supported by a leaf spring pivoted at its inner end, the nozzle being controlled by a handle through a telescoping connection.

3,710,413
ELECTRIC RAZOR CLEANER
Willis E. French, 7230 Raintree Drive, Citrus Heights, Calif.
Filed Feb. 19, 1971, Ser. No. 116,831
Int. Cl. A47l 5/00
U.S. Cl. 15—405 **1 Claim**

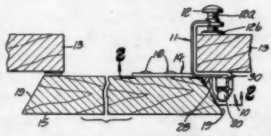
A bulb, nozzle, and brush for cleaning hair from an electric razor blade.

3,710,414
EDGE-FORMING MEANS FOR FLOORING
Robert T. Fuller, 449 S. Rancheria Rd., and Keith A. Smith, 528 Torito Lane, both of Diamond Bar, Calif.
Division of Ser. No. 641,106, May 9, 1967, Pat. No. 3,528,122, Continuation of Ser. No. 549,295, May 11, 1966, abandoned. This application July 28, 1970, Ser. No. 64,877
Int. Cl. A47g 27/04
U.S. Cl. 16—8 **5 Claims**



This invention relates to edge-forming means for various types of flooring materials, especially of carpets. A preferred feature of the invention resides in the use of an edging strip which is held down against the floor and the pile of a carpet as a second class lever, and which possesses viscoelastic properties.

3,710,415
HINGE
Harry C. Wilson, 15126 Rayneta Drive, Sherman Oaks, Calif.
Filed Nov. 18, 1970, Ser. No. 90,695
Int. Cl. E05d 9/00
U.S. Cl. 16—128 **13 Claims**



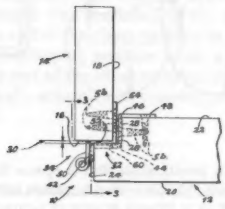
A hinge having a pair of leaves formed with interleaving curls pivotally connected by a pair of hinge pins internesting with one another in a press fit and each also preferably having a press fit with a respective one of the hinge curls. One leaf includes integral tang means having an edge parallel to the hinge axis and positioned to locate the hinge accurately along the edge of a door while being attached thereto. The other hinge leaf is shaped to embrace the edge of a door frame and carries clamping screw means for anchoring the hinge in place without need for fasteners.

3,710,416

DOOR MOUNTING ASSEMBLY

Malcolm T. Phelps, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.

Filed Oct. 15, 1970, Ser. No. 80,967
Int. Cl. E05d 5/06
U.S. Cl. 16—135 3 Claims



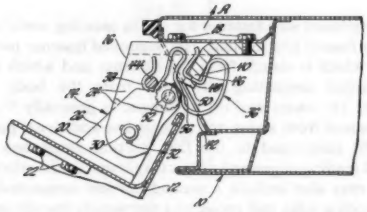
A barrel type hinge construction and mounting arrangement for minimizing crack dimension between a door and cabinet frame.

3,710,417

VEHICLE BODY DOOR HINGE HOLD-OPEN CLIP

Dennis W. Berman, Detroit, and Bela Gergoe, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed March 18, 1971, Ser. No. 125,741
Int. Cl. E05d 11/08
U.S. Cl. 16—142 4 Claims



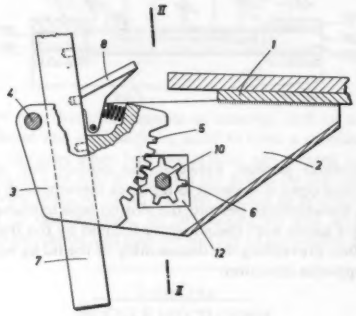
A vehicle body door hinge includes a pair of pivotally connected hinge members, one of which has a pair of attachment members over which are respectively snapped a pair of generally U-shaped attachment portions respective the ends of an integral hold-open clip to mount the hold-open clip on the one hinge member. A generally U-shaped hold-open portion of the clip extends between the attachment portions and with the hinge members in a door closed position, the closed end of the hold-open portion of the mounted clip assumes an undeflected position and is located laterally to and out of engagement with a roller mounted on the other hinge member. Relative movement of the hinge members from the door closed position toward a door open position moves the roller into engagement with the closed end of the hold-open portion and deflects the hold-open portion, storing energy within the mounted clip until the hinge members reach an intermediate position between the open and closed positions. Thereafter, during relative movement of the hinge members toward the door open position, the clip releases a portion of the quantity of stored energy as the hold-open portion moves partially toward the undeflected position, assisting in opening movement of the hinge members and moving the roller into engagement with the closed end of one of the attachment portions as the hinge members reach the open position where the clip detents the hinge members. In the open position, the roller biases the attachment portions of the clip against the attachment members to thus provide a force preventing dismounting of the clip from the one hinge member upon each successive movement of the hinge members to open position.

3,710,418

CHAIR HAVING A BACK REST AND MEANS FOR ADJUSTING THE INCLINATION THEREOF

Walter Kratzer, Altheim, Austria, assignor to Wiesner-Hager KG, Altheim, Austria

Filed Oct. 14, 1971, Ser. No. 189,353
Claims priority, application Austria, Oct. 30, 1970, A 9766/70
Int. Cl. E05d 11/10
U.S. Cl. 16—145 13 Claims



A pocket member is fixed or adapted to be fixed to the seat plate of a chair. A horizontal shaft is rotatably mounted in said pocket member. A bearing member and a pinion are corotationally mounted on said shaft. A holder is pivoted to said pocket member on a horizontal axis and connected or adapted to be connected to the back rest of said chair. A gear segment is carried by said holder and in mesh with said pinion. A non-rotatable ratchet ring is coaxial with said shaft and secured to said pocket member and carries internal teeth. Two symmetrically opposite locking pawls are pivoted to said bearing member on axes which are parallel to said shaft. Each of said locking pawls has a toothed outer side which faces said internal teeth and is engageable therewith in such a manner that one of said locking pawls is engageable with said internal teeth to hold said bearing member and shaft against rotation in one, and only one, direction, and the other of said locking pawls is engageable with said internal teeth to hold said bearing member and shaft against rotation in the opposite, and only in the opposite, direction. Spring means urge said locking pawls into engagement with said internal teeth. Two cam followers are provided, each of which is generally parallel to said shaft and carried by one of said locking pawls. A hand wheel is freely rotatably mounted on said shaft and provided with first cam faces which are adapted to engage said cam follower of that of said locking pawls which normally holds said bearing member against rotation in the direction in which the hand wheel is being rotated, and with two spaced apart second cam faces. An additional cam follower is carried by said bearing member and extends with a backlash between said second cam faces.

3,710,419

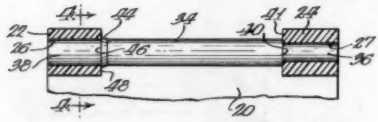
HINGE STRUCTURE

Walter J. De Groft, Glen Ellyn, Ill., assignor to Sanford Research Company

Filed Feb. 9, 1971, Ser. No. 113,997
Int. Cl. E05d 1/06
U.S. Cl. 16—171 4 Claims

An integral hinge assembly for a plastic container having a base and a lid constructed to permit the lid to be assembled to the base by sliding it axially in position with one motion, wherein the base includes spaced aligned bosses having cylindrical bearing surfaces with one of the bosses being slotted to receive the lid during assembly. The lid has integrally formed

therewith a central shank portion flanked by two oppositely directed pintles with the pintle leading during assembling having a smaller diameter than the other pintle to form a shoulder with the shank portion limiting the movement of the pintles into the bosses during assembly. There is also provided, adjacent what would be the trailing pintle during assembly, a



frusto-conical portion between the pintles that cams the slotted boss open somewhat as it passes therethrough and after passing therethrough permits the slotted boss to clamp around the larger pintle with the shoulder formed by the frusto-conical portion preventing the disassembly of the lid by withdrawal in the opposite direction.

3,710,420

METHOD FOR FORMING THEMAIN BODY OF A CATAMENIAL TAMPON

Akira Yamauchi, 121 Tatsumachi, Sasayama-cho, Taki-gun, Japan

Filed July 10, 1970, Ser. No. 53,733
Claims priority, application Japan, July 19, 1969, 44/57301
Int. Cl. A61l *15/00*
U.S. Cl. 19—144.5 **1 Claim**

A wad of fibrous material provided with a pulling string and a stem inserted therein with its one end projected outward is first compressed from opposite sides by a pair of side dies and then compressed from the front and rear by a pair of transverse dies so as to obtain a cylindrical main body of a tampon. By carrying out these two steps of compression separately, the fibrous body obtained, when used, can be swollen into an elliptical or spindlelike shape in fitting contact with the vagina.

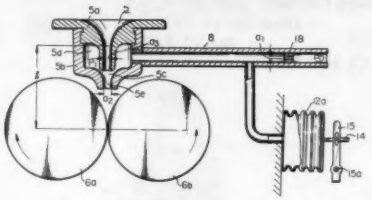
3,710,421

PNEUMATIC DEVICE FOR AUTOMATIC CONTROL SYSTEM OF SLIVER'S THICKNESS

Takuzo Tooka, Aichi-ken, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya-shi, Aichi-ken, Japan

Filed Aug. 2, 1971, Ser. No. 168,118
Claims priority, application Japan, Aug. 3, 1970, 45/68209
Int. Cl. D01h *5/38*
U.S. Cl. 19—240 **4 Claims**

In the automatic control system of sliver's thickness wherein the thickness of sliver continuously delivered from a draft mechanism is measured by an air-micrometer and, when a portion of sliver having unacceptable thickness is detected, the draft ratio is changed so as to produce sliver having allowable variation of thickness, the measuring device of the air-micrometer is provided with a trumpet-like condensing member and a delivery cylindrical member disposed at a coax-



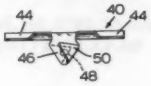
ially downstream position so that a space for embracing the sliver in pressurized air is formed between both members.

3,710,422

WEBB FASTENERS

Gerrit van Halteren, Lindsay, Ontario, Canada, assignor to Lindsay Specialty Products Ltd., Lindsay, Ontario, Canada

Filed March 8, 1971, Ser. No. 121,707
Int. Cl. A47c *3/00*
U.S. Cl. 24—265 C **10 Claims**



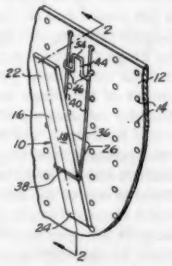
An improved web fastener for use in securing webs to tubular chair frames and the like. The improved fastener includes a tongue which is struck from the fastener and which has the first portion projecting outwardly from the body of the fastener. The outer end of the tongue is generally V-shaped when viewed from above and at least one additional portion is integrally connected to the first portion along one of the inclined leading edges and projects rearwardly therefrom. The tongue may also include a second portion connected to the other leading edge and projecting rearwardly therefrom. Each of the portions which project rearwardly from the first portion is outwardly inclined relative to the first portion so as to form a leaf-type spring which is compressible towards the first portion so as to be easily mounted in an opening in use.

3,710,423

CLAMPING DEVICE

Marion D. Zimpleman, 814 Wildwood Drive, Kokomo, Ind.

Filed May 14, 1971, Ser. No. 143,476
Int. Cl. B42f *1/00*
U.S. Cl. 24—67.5 **6 Claims**



A clamping device for releasably clamping an article to a perforated board. The device comprises a vertically elongated

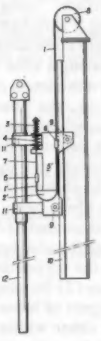
clasp member having rearwardly extending integral pivot means intermediate its upper end and lower end, and a resilient support member engaging the clasp member between the lower end and pivot means thereof. The support member is detachably secured to a perforated board through the perforations in the board and maintains the clasp member in a clasping position with the lower end and pivot means in biased contact against the board and with the upper end in spaced relation to the board. The resiliency of the support member permits the lower end of the clasp member to pivot away from the board to an unclasping position when a force is applied against the upper end of the clasp member toward the board, and to automatically return to its clasping position when the force is removed.

3,710,424

BRAKING MEANS FOR A FLEXIBLE CONNECTING ELEMENT WHICH IS RESILIENTLY SUPPORTED AT ONE END AND MAY BE STRESSED IN SHOCKS

Hellmuth Smejkal, and Walter Schwarz, both of Linz, Austria, assignors to Vereinigte Osterreichische Eisen - und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed Aug. 12, 1971, Ser. No. 171,086
Claims priority, application Austria, Aug. 18, 1970, 7464
Int. Cl. C21c *7/06;* **B66d** *1/54;* **B66b** *5/02*
U.S. Cl. 24—123 R **6 Claims**



The invention relates to a braking means for a flexible connecting element which is resiliently supported at one end and may be stressed in shocks, as used for example for a tackle rope or chain, particularly for the auxiliary rope of a hoist for oxygen blowing lances, comprising an arc-shaped deflection part which is stationary in its circumferential direction over which the connecting element is guided to slide under friction, and two springs for resiliently supporting the connecting element, the springs being arranged one behind the other and having different spring constants, one spring with a smaller spring constant serving for pre-stressing the connecting element, and the other spring with a greater spring constant being pre-stressed and designed for accommodating part of the shock-like stress. Owing to this arrangement it becomes possible to design the springs absorbing the shock in case of a rope rupture relatively small.

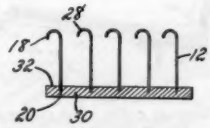
3,710,425

GRIPPING FASTENING SURFACE

George C. Brumlik, 154 Upper Mountain Avenue, Montclair, N.J.

Filed Sept. 11, 1969, Ser. No. 857,075
Int. Cl. A44b *17/00*
U.S. Cl. 24—204 **4 Claims**

In making a self-gripping fastening surface of the type in which two articles are capable of gripping one another with a self-adhering action but which are releasable upon being forcibly pulled apart and separated, a plurality of elongated filament-like elements or fibrils are cut from a sheet of flexible material and mounted in upstanding position on at least one of the articles to be attached. The free ends of the mounted fibrils are subjected to a treatment, for example by applying a



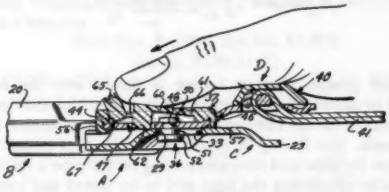
source of heat thereto, capable of causing each of said free ends to bend and curl back on itself to form a terminal hook thereon, whereby when two like articles are pressed together, the hooks on one article will grip the hooks on the other article and vice versa to cause the two articles to become tightly fastened to one another, or the hooks on one article are caused to penetrate and grip the surface of a frangible article.

3,710,426

BUCKLE MECHANISM

James A. Gavagan, Center Line, Mich., assignor to Irvin Industries Inc., Lexington, Ky.

Filed Feb. 23, 1971, Ser. No. 118,110
Int. Cl. A44b *17/00, 11/25*
U.S. Cl. 24—224 R **6 Claims**



A coupling for a safety seat belt system including at least first and second buckle members, one buckle member including connector means and latch means and the other buckle member including pocket means for receiving the connector means of the first mentioned buckle member, the latch means of the first mentioned buckle member including blocker means extending into the mouth of the pocket means for releasable retention of the connector means of one buckle member in the pocket portion of the other.

ERRATA

For Classes 24—265 B thru 29—203 D see:
Patents Nos. 3,710,458 thru 3,710,483

3,710,427

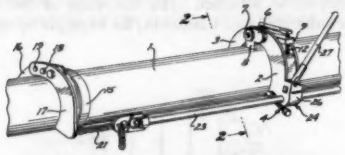
COLLAR PULLER FOR METAL PIPE

John T. Doty, 9936 E. Ramona Ave., Bellflower, Calif.

Filed Aug. 26, 1971, Ser. No. 175,147
Int. Cl. B23p *19/02*
U.S. Cl. 29—237 **6 Claims**

When handling large diameter metal pipe of an industrial nature, the various sections of the pipe are connected by collars and these collars must be moved horizontally while the pipe is in a ditch or the like; thus requiring that the pipe

gripping tongs shall securely engage the metal pipe without slipping when a force is applied to the tongs. Also when installing metal pipe the pipe sometimes extends at an angle,



thus requiring an arcuate collar. The collar puller, therefore, must be flexible to align the coupling with one section of the metal pipe.

3,710,428

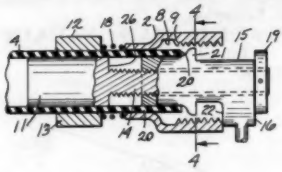
PLASTIC PIPE FLARING TOOL

Bengt G. Bjalme, and Robert E. Buhl, both of Erie, Pa., assignors to Reed Manufacturing Company, Erie, Pa.

Continuation of Ser. No. 837,413, June 30, 1969, abandoned. This application June 9, 1971, Ser. No. 151,502

Int. Cl. B23p *19/04*

U.S. Cl. 29—237 **10 Claims**



Thermo plastic pipe or tubing is flared into the outer member or nut of a flare fitting of the type in which the flare is interlocked with an annular recess of greater diameter than the threads. The flaring is accomplished by first assembling the nut on the pipe and then assembling on the pipe a spinning tool locally contacting the pipe end to be flared and rotated and axially advanced about the axis of the pipe. As the tool is rotated, the plastic is locally deformed both axially and radially and at the end of the flaring operation is squeezed into the annular recess so that the nut is permanently attached to the pipe by the flare.

3,710,429

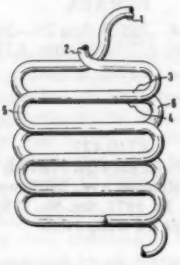
SLIDING CLASP FASTENERS

Siegfried W. Spindler, Friedenstrasse 19, Unterpfaffenhofen, Germany

Filed Aug. 27, 1971, Ser. No. 175,681

Int. Cl. B21f *45/18*

U.S. Cl. 29—410 **1 Claim**



A process of making zip fastener elements is disclosed comprising the steps of bending two filaments of thermoplastic materials into S-shaped configurations, positioning these S-shaped configurations above each other, joining these S-shaped configurations together by welding along their central longitudinal axis, forming engaging heads in the welding process, separating the welded together S-shaped zigzag configurations along their central longitudinal axis and joining those fastener elements to supporting tapes either prior to or after separating by means of welding or sewing.

3,710,430

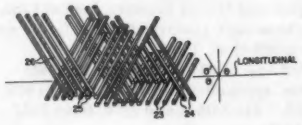
METHOD FOR OPTIMIZING THE MAKING OF A LAMINATED FIBROUS STRIP

Arthur H. Long, Jeannette, and Joseph Seidel, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 21, 1971, Ser. No. 155,073

Int. Cl. B23p *17/00*

U.S. Cl. 29—419 **6 Claims**



A method for preparing a fibrous laminated strip on an elongated supporting surface, using a continuous fiber shredding apparatus having X shredders each cutting and applying P fibers/min., the strip consisting of N laminated layers of shredded metal fibers having a total weight per unit area of W gr./in^2, the fibers having a thickness of f_1 in., a width of f_2 in. and a density of d gr./cu. in., the fibers of each layer being disposed at an orientation angle θ from the longitudinal axis of the supporting surface; the method comprising the steps: (1) forming a layer having a weight per unit area of w gr./in^2 by applying P fibers/min. on the elongated supporting surface in a longitudinal direction, the fibers being disposed substantially parallel to each other and at an angle θ of between 15° and 75° from the longitudinal axis of the elongated supporting surface, the fibers being applied to the supporting surface at a traverse speed of Q in./min. and then (2) forming N layers by applying, at a speed Q, additional layers of loose thin metal fibers substantially parallel to each other within a layer, to cover the previous layer at an angle from the longitudinal axis of the elongated supporting surface alternating between θ and θ' where $\theta' = \theta$ wherein the following relationship exists:

$$Q = X[(d)(N)(P)(f_2)/(W)(\sin\theta \text{ or } \theta')].$$

3,710,431

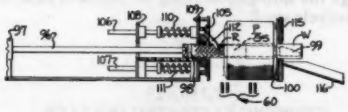
METHOD OF PREPARING PACKAGES OF YARN FOR SUBSEQUENT TREATMENT

David M. Willis; William O. Young, Jr., and Walter J. Quattlebaum, all of Spartanburg, S.C., assignors to Butte Knitting Mills, Spartanburg, S.C.

Division of Ser. No. 645,645, June 13, 1967, Pat. No. 3,564,695. This application Nov. 23, 1970, Ser. No. 91,974

Int. Cl. B23p *19/00*

U.S. Cl. 29—428 **9 Claims**



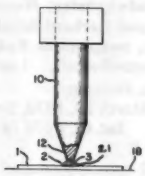
A method whereby a plurality of core supported wound packages of yarn are moved in a predetermined common path of travel past a core replacement station and a replacement core is substituted for the winding core at the core replacement station, in order to prepare the packages of yarn for subsequent treatment such as dyeing and the like.

3,710,432

METHOD FOR REMOVING A METALIZED DEVICE FROM A SURFACE

George W. Dieffenbacher, Fairfield, and Harold E. Hadcock, Sauquoit, both of N.Y., assignors to General Electric Company

Filed March 30, 1971, Ser. No. 129,398
Int. Cl. B23p 19/00
U.S. Cl. 29—426 4 Claims



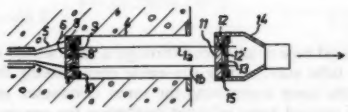
Means and method for removing a metalized device bonded to a substrate from the substrate. A tool having a surface consisting of a metal having an affinity for the metalization of the metalized device is brought into engagement with the device. The tool is bonded to the device and heat is provided to exceed the eutectic point of the bond between the device and substrate. After bonding, the tool and device bonded thereto are removed from the substrate. The device may afterward be removed from the tool in any convenient manner.

3,710,433

METHOD FOR STRESSING AND ANCHORING WIRES OF A BUNDLE OF TENSION WIRES

Antonio Brandestini, 60 Alte Landstrasse, Zurich, Switzerland

Filed April 1, 1971, Ser. No. 130,103
Claims priority, application Switzerland, May 25, 1970, 7724/70
Int. Cl. B21d 39/00
U.S. Cl. 29—452 10 Claims



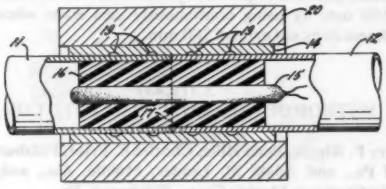
A method of stressing and anchoring the wires of a bundle or bunch of tensioning wires or the like for a concrete structure by means of clamping wedges and an anchoring body, which comprises the steps of loosely placing an anchoring head equipped with wire receiving bores onto the wires while the wires are in untensioned condition. Clamping wedges are inserted into the wire receiving bores and are fixedly retained therein without the wedges clamping the wires. The anchoring head together with the thus inserted wedges is displaced along the wires into a recess of the concrete structure accommodating the ends of the wire bunch, displacement occurring through a distance approximately corresponding to the length of elongation of the wires which is contemplated. Then in this position of the anchoring head the clamping wedges are pressed against the untensioned wires into a wire clamping position, the wire bunch is tensioned, tensioning or stressing occurring during withdrawal of the anchoring head from the concrete structure recess, whereupon the withdrawn anchoring head is supported against the concrete structure.

3,710,434

EXPLOSIVE PIPE COUPLING METHOD

Neville H. G. Daniels, Los Altos, and Edward S. Wright, Los Altos Hills, both of Calif., assignors to Anken Chemical & Film Corporation, Newton, N.J.

Filed March 6, 1970, Ser. No. 17,173
Int. Cl. B23k 21/00
U.S. Cl. 29—470.1 9 Claims



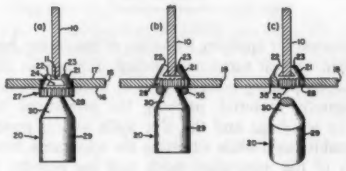
Pipes or other tubular members are explosively joined. An internal smooth walled tube is placed within an outer tube or sleeve having one or more circumferential internal grooves; an explosive charge centered within a shock force transmitting core is positioned within the inner tube, and a smooth-walled tubular die is positioned outside the sleeve. By exploding the charge and transmitting force radially outward, the inner tube is caused to expand radially and circumferentially into a permanent conforming contact with the outer tube or sleeve and its internal groove or groves.

3,710,435

METHOD OF ASSEMBLY AND BONDING

Francis Vincent Cordo, Utica, N.Y., assignor to General Electric Company

Filed Nov. 5, 1970, Ser. No. 87,070
Int. Cl. B23k 31/02
U.S. Cl. 29—470.5 14 Claims



A method of joining first and second walls of an article such as a chassis. The edge of a first wall is aligned with a hole in the surface of the second wall. A pin is inserted in the hole to retain the second wall against the first. The pin has a bifurcated portion for gripping the first wall, a plug portion which is friction fit in the hole and a post portion which facilitates handling of the pin. The first and second walls and the pin are bonded, and the post portion is thereafter broken away.

3,710,436

METHOD FOR THE PRODUCTION OF PLATES

Rudolf Schoffmann, Linz, Austria, assignor to Vereiniate Oster-reichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed April 27, 1970, Ser. No. 32,459
Claims priority, application Austria, May 9, 1969, A 4444/69
Int. Cl. B23p 25/00
U.S. Cl. 29—527.6 2 Claims

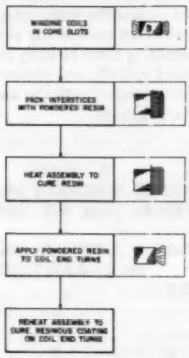
The invention relates to a method for the production of plates from continuously cast slabs. Immediately after the continuously cast bar has solidified and as soon as its marginal

zone has reached a mean temperature of 800° to 1000°C while the core zone is still of higher temperature, a continuously cast bar is shaped in a preliminary one-step shaping process in which primarily the core zone is shaped. After shearing to length, the slabs are cooled, re-heated to rolling temperature and shaped in a multi-step rolling process proper wherein essentially the marginal zones of the slabs are subjected to shaping so that finally a uniform degree of shaping is achieved over the total cross section of the slabs. By this new method it becomes possible to produce plates with a cross section of 50 to 100 mm by using continuously cast slabs whose initial thickness does not exceed 300 mm.

3,710,437
METHOD OF PREPARING INSULATED COIL IN SLOTTED CORE

Harry P. Kipple, Penn Hills; Charles E. Price, Pittsburgh, both of Pa., and Adam M. Leader, Mobile, Ala., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 5, 1970, Ser. No. 61,106
Int. Cl. H02k *15/02, 15/10, 15/12*
U.S. Cl. 29—596 **9 Claims**

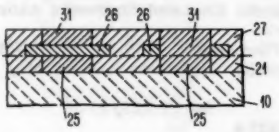

WINDING COILS IN CORE SLOTS
PACK INTERSTICES WITH POWDERED RESIN
HEAT ASSEMBLY TO CURE RESIN
APPLY POWDERED RESIN TO COIL END TURNS
REHEAT ASSEMBLY TO CURE RESINOUS COATING ON COIL END TURNS

A process for applying a coating of insulating, heat hardenable resin to coil turns or windings for use in electrical apparatus, by placing coils of turns or windings in slots of a core of magnetic material, packing the interstices between the turns or windings and the slot walls with a powder of heat hardenable resin while vibrating the apparatus, heating the assembly of the apparatus, coils, and the powder to cure the resin, and applying the powdered resin to melt and the heated end portions of the coils external of additional slots to obtain a cured resinous coating thereon.

3,710,438
METHOD FOR MAKING MAGNETIC THIN FILM HEADS WITH MAGNETIC ANISOTROPY

Erhard Max, Sindelfingen, and Dietrich Rogalla, Boeblingen, both of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1970, Ser. No. 100,991
Int. Cl. G11b *5/42;* **H01f** *7/06*
U.S. Cl. 29—603 **9 Claims**



A method for the batch fabrication of thin film magnetic heads with pole pieces having a preferred magnetic direction. The pole pieces are generated by growing, on a suitably oriented monocrystalline substrate, monocrystalline layers of zinc ferrite in zones corresponding to the respective geometrical form of the pole pieces, these layers having an inserted component (e.g. Ni) which renders the ferrite ferromagnetic. The Ni component may be added during the growing process or afterwards inserted in, or removed from homogeneous layers by a masked diffusion process.

3,710,439
PRODUCTION OF 2-MERCAPTOETHANOL

Walter Goetze, Ludwigshafen; Werner Kasper, Frankenthal; Gerhard Klatt, and Gerhard Schulz, both of Ludwigshafen, all of Germany, assignors to Badische Anilin - & Soda - Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Land Rhineland-Pfatz, Germany

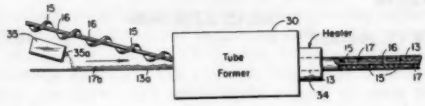
Filed March 20, 1970, Ser. No. 21,534
Int. Cl. C07c *149/18*
U.S. Cl. 260—609 R **4 Claims**

Production of 2-mercaptoethanol by reaction of ethylene oxide with hydrogen sulfide in a molar ratio of about 1:1 in the presence of bis-(β-hydroxyethyl) thioether as solvent at elevated temperature under superatmospheric pressure in homogeneous phase. 2-mercaptoethanol is used for the production of insecticides.

3,710,440
MANUFACTURE OF COAXIAL CABLE

John J. Nevin, Orange, Conn., and Leo G. Dumire, Stony Point, N.Y., assignors to Phelps Dodge Copper Products Corporation, New York, N.Y.

Division of Ser. No. 801,568, Feb. 24, 1969, abandoned, which is a continuation-in-part of Ser. No. 660,791, Aug. 15, 1967, abandoned. This application Jan. 16, 1970, Ser. No. 3,286
Int. Cl. H01b *13/00;* **H05k** *3/00*
U.S. Cl. 29—624 **6 Claims**



A metal tape is advanced through a zone where it is formed into a tube surrounding the cable core passing through this zone, the core comprising the inner conductor and longitudinally spaced turns of solid insulation for spacing this conductor from the tube constituting the outer conductor. A foam-forming composition is coated on at least one of said core and tape in advance of the tube-forming zone and is expanded in the formed tube to provide an insulating foam filling the spaces between the turns of the solid insulation.

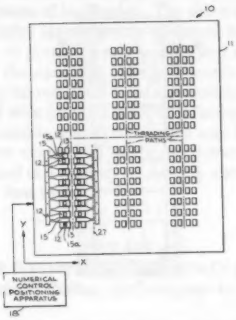
3,710,441
NUMERICALLY CONTROLLED AUTOMATIC WIRING SYSTEM

Sergio A. Alessio, Elmhurst, and Weichien Chow, Park Forrest, both of Ill., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed May 15, 1970, Ser. No. 37,503
Int. Cl. H01b *13/00;* **H05k** *3/00*
U.S. Cl. 29—624 **10 Claims**

A compact, multi-branch, plug-in interconnection module of either two-dimensional or three-dimensional form providing a desired interconnection pattern and having a total effective length related to the sum of the lengths of the individual branches. The interconnection module is fabricated by initially supporting the module terminals in a threading fixture

disposed below a threading head which supplies a continuous insulated wire. The fixture is driven in *x–y* directions by a numerical control positioning apparatus so as to cause the wire from the threading head to thread selected terminals along predetermined paths in a predetermined sequence. After threading, the wires are electrically affixed to the respective terminals to which they were threaded. The resulting structure is then removed from the threading fixture and subjected to a



cutting operation which provides for the cutting of wires in all paths except predetermined assigned "threading paths". The program of the numerical control apparatus is chosen in conjunction with the assignment of the "threading paths" so that the cutting operation results in eliminating all terminal interconnections except those desired in the completed interconnection module. After the cutting operation, the structure is bent into a desired two or three-dimensional shape and then encapsulated leaving its plug-in terminals exposed.

3,710,442

DRY SHAVING APPARATUS

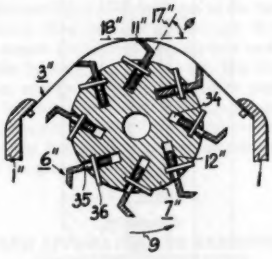
Gerald Meyer, Maj Trojerstrasse 3, Klagenfurt Carinthia, Austria

Filed Dec. 2, 1970, Ser. No. 94,428

Claims priority, application Austria, Dec. 5, 1969, A 11399/69

Int. Cl. B26b *19/16*

U.S. Cl. 30—43.6 **5 Claims**



A dry shaving apparatus having an upper cutter with a rotary cutter carrier and a plurality of hook-shaped lower cutters supported by the carrier and cooperating with the upper cutter. The carrier has a straight guide for each of the lower cutters and each guide and lower cutter being disposed and proportioned so that the longitudinal direction of each guide describing an angle governed by the point of contact of the lower cutter edge with the upper cutter.

3,710,443

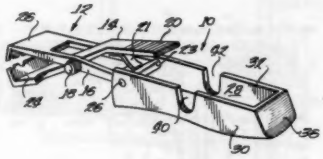
FOLDABLE POCKET KIT

Alwin J. Stahel, New Brighton, Minn., assignor to Arthur Salm, Inc., Chicago, Ill.

Filed Nov. 4, 1970, Ser. No. 86,777

Int. Cl. H02g *1/12*; B26b *29/04*

U.S. Cl. 30—151 **10 Claims**



A pocket kit device is disclosed including a handle incorporating a sheath for holding a scissors-like one or more tools pivotally mounted for movement between an extended, working position and a retracted, storage position and a protruding manually engageable pin or similar element. One particularly useful type of tool includes two arm portions pivotally connected to each other to provide scissors-like movement. The end portions of the pin which provides the pivotal connections are adapted to extend outwardly from the tool to protrude through recesses in the sides of the handle when the tool is in the retracted position. These protruding portions may be manually engaged with the thumb or finger to move the tool from the retracted position within the sheath to an extended position for use, and they constitute the manually engageable element referred to above.

3,710,444

APPARATUS FOR CUTTING THIN-WALLED OBJECTS

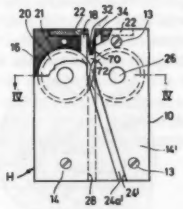
Abraham Fishman, Sonnhaldenstrasse 6, 8032 Zurich, Switzerland

Filed Dec. 21, 1970, Ser. No. 100,057

Claims priority, application Switzerland, Dec. 29, 1969, 19511/69; July 22, 1970, 11088/70

Int. Cl. B26b *13/00, 29/00*

U.S. Cl. 30—265 **5 Claims**

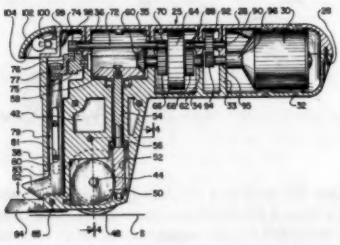


There is disclosed an apparatus for the cutting through of thin-walled objects with two cutting wheels mounted within a housing at shafts or axes spaced from one another and wherein such cutting wheels are rotatable independently of one another. The housing possesses an infeed gap or opening at which the cutting edges of both cutting wheels cooperate. According to important aspects of this invention the housing, defining a holder unit for the apparatus, encloses the cutting wheels, there being provided at the housing two guide slots which open at the infeed gap. Both cutting wheels are mounted to be freely rotatable and axially fixed with respect to one another.

3,710,445
A CUTTER DEVICE WITH ILLUMINATED CUTTING BLADE

Herman Roth, 200 Penn Street, Brooklyn, N.Y.

Filed Feb. 12, 1971, Ser. No. 114,988
Int. Cl. B26b *15/00, 25/00*
U.S. Cl. 30—241 9 Claims

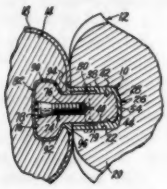


A cutter device for sheet material has a manually guidable cylindrical housing formed with a column at the base of which is supporting wheel means and a fixed blade. A reciprocating or rotary blade cooperates with the fixed blade to cut sheet material. First gear means operatively interconnect the wheel means and movable blade. A generator in the housing operatively connected mechanically to the first gear means is electrically connected to lamp means to illuminate the blades while the wheel means turns and the movable blade is moved. A motor can be provided in the housing to drive the generator, gear means, movable blade and wheel means. The wheel means may include one or two wheels.

3,710,446
ADJUSTABLE DENTURE ATTACHMENT

Melvin D. Poveromo, c/o Bay Harbor Medical Center, 1160 Kane Concourse, Suite 203, Bay Harbor Islands, Fla.

Filed May 7, 1971, Ser. No. 141,184
Int. Cl. A61c *13/22*
U.S. Cl. 32—5 6 Claims

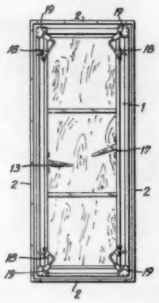


An attachment means for the connection of a denture to a natural or artificial tooth has a female housing anchored in said tooth and a multi-part connector associated with the denture. The connector includes an insert and a connector housing from which an expandable head of the insert extends for engagement in the female housing. The head is bifurcated, and has a bore receiving a horizontal expander screw, and the insert is maintained in engagement in the connector housing by an interfit and by transverse fasteners. The latter are optionally of resilient form.

3,710,447
TEMPLATES

Arthur George Howlett, 59 Marion Avenue, Glenashley, Durban, Natal Province, South Africa

Filed May 13, 1970, Ser. No. 36,791
Claims priority, application South Africa, May 16, 1969, 69/3454
Int. Cl. E06b *3/00*
U.S. Cl. 33—194 6 Claims

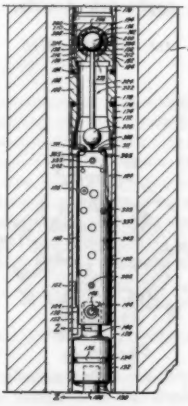


A template by which doors or other panels may be easily cut to shape to fit predetermined openings therefor. The template comprises flexible strips along at least two adjacent edges extensible under the effect of spring loaded rods at various points along the strips and having a retracting mechanism interconnecting all the spring loaded rods and operable through a single manipulating handle with a further single manipulating handle associated with means to lock the spring loaded rods in different positions.

3,710,448
RECORDING INCLINOMETER

J. D. Kimmel, and George M. Clark, both of Houston, Tex., assignors to Thermotics, Inc., Houston, Tex.

Filed Aug. 30, 1971, Ser. No. 176,111
Int. Cl. E21b *47/02*
U.S. Cl. 33—306 14 Claims



A well bore inclinometer comprises an instrument mounted in a flow tube forming a part of a drill string. The instrument includes a record tape cartridge that is reciprocated each time the pump pressure is shut off and restored. Each upward motion causes the tape to be perforated by a punch on the lower end of a pendulum and to be perforated by a plurality of punches located at the upper end of the cartridge. The position of the hole made by the punch carried by the pendulum relative to the field of holes caused by the plurality of punches

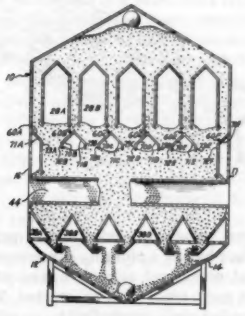
indicates degree and direction of inclination. Each reciprocation of the cartridge moves the tape to present a new unpunched area. If the flow tube is made of non-magnetic material, the pendulum may be magnetized to function as a compass, and the punch may then be in the form of a pointer to indicate a compass direction. The cartridge includes a resilient platen disposed beneath the part of the tape being punched. The platen is secured to the cartridge at its periphery leaving the upper surface substantially clear for reception of the punches marking the field as well as that of indicating the direction of inclination. The drive means for moving the tape includes spring means to insure sufficient movement of the tape to present a new unpunched area upon each reciprocation of the cartridge. The instrument portion of the inclinometer may be retrieved from and inserted into the flow tube by means of wire line. To this end a fishing head adapted for making a releasable connection with a wire line fishing tool is attached to the upper end of the instrument. The fishing head is constructed in a manner to provide a low resistance to flow through the flow tube.

3,710,449

GRAIN DRYER WITH IMPROVED GRAIN DEFLECTOR

Charles H. Rathbun, Colfax, Ill., assignor to M & W Gear Company

Filed Jan. 6, 1971, Ser. No. 104,305
Int. Cl. F26b *19/00*
U.S. Cl. 34—65 **8 Claims**



A concurrent-countercurrent flow, column type grain dryer having an enclosed bin with a wet grain inlet at the top and a dry grain outlet at the bottom includes means for introducing a concurrent flow of hot air as a drying medium for the grain. Means are also provided at the bottom of the bin to introduce a countercurrent flow of cool air through the grain. Intermediate the means for introducing the hot and cool air is an exhaust for the heating and cooling air. The improvement of this invention comprises grain deflectors positioned intermediate the hot air inlet ducts and the exhaust ducts. The deflectors initiate cross flows of grain to prevent channeling of the grain and the hot air flow and to insure uniform heating and drying of the grain.

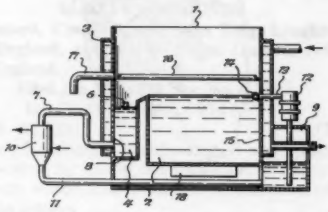
3,710,450

PROCESS AND APPARATUS FOR REMOVING LIQUIDS FROM SOLID SURFACES

Francis John Figiel, Boonton, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 805,561, March 10, 1969, Pat. No. 3,559,297, and a continuation-in-part of Ser. No. 831,890, June 10, 1969, Pat. No. 3,589,023. This application Feb. 1, 1971, Ser. No. 111,347
Int. Cl. F26b *3/00*
U.S. Cl. 34—9 **66 Claims**

Method for removing liquid from a non-absorbent article comprising immersing the article into a vigorously agitated solvent bath, transferring displaced liquid and solvent directly to a separation zone, withdrawing liquid which collects as one phase in the separation zone, removing solvent which collects as another phase in the separation zone, recycling this solvent to the solvent bath, and removing the article from the solvent bath. An alternative to the solvent bath is a spray treatment. Apparatus comprises various sumps and piping to accomplish



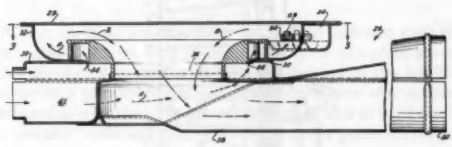
the above, including at least one sump equipped with means for the vigorous agitation of liquid contained therein, such as ultrasonic vibration means if a solvent bath embodiment is employed, or at least one sump equipped with a spraying means if the spray treatment embodiment is employed. The above-described systems are particularly adapted for the removal of water from non-absorbent articles, and particularly articles with relatively inaccessible surfaces.

3,710,451

CLOTHES DRYER LINT INCINERATOR

Leo V. Buck, Herrin, Ill., assignors to Fedders Corporation, Edison, N.J.

Filed March 31, 1971, Ser. No. 129,837
Int. Cl. F26b *21/06*
U.S. Cl. 34—79 **3 Claims**



An improved clothes drying machine of the forced air type is provided. The machine includes a centrifugal lint separator disposed in the machine air flow path downstream of the clothes receptacle which is adapted to impart a circular air flow to the lint-laden air stream entering the separator. An electrically heated coil is provided in the separator spaced radially outwardly of the separator inlet and outlet openings so that centrifugal force urges lint particles in the air stream over the coil where they are ignited and incinerated prior to entering the machine exhaust.

3,710,452

HAIR PIECE LINER

James Saunders Hamrick, Orange, Calif., assignor to McMurtrie & Hamrick Enterprises, Orange, Calif.

Filed Jan. 28, 1971, Ser. No. 110,559
Int. Cl. F25b *19/00*
U.S. Cl. 34—95 **13 Claims**

A disposable absorbent layer of material is attached by adhesive to a person's scalp and to a hair piece to absorb scalp perspiration and thereby prolong effectiveness of the adhesive. The adhesive is initially protected by a sheet which is removed when the liner is to be used. In one arrangement, the absorbent material is confined between backing sheets of moisture impervious material with a pattern of holes being formed in the lower sheet to permit moisture to reach the absorbent material. In another arrangement, a liner comprises a

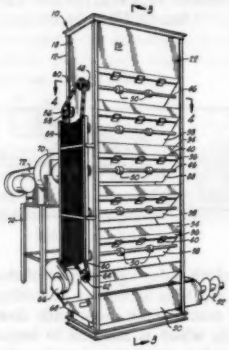
sheet of material having a pattern of canals permanently formed in its lower surface with the canals being open to the

person's scalp to permit moisture and air circulation, thereby protecting the adhesive used to attach the liner to the scalp by adhesive.

3,710,453
FLAKE AND PELLET COOLER

Donald E. Whelpley, Oklahoma City, Okla., assignor to J. P. Burroughs & Sons, Inc., Saginaw, Mich.

Continuation-in-part of Ser. No. 829,222, June 2, 1969, abandoned. This application Feb. 19, 1971, Ser. No. 117,006
Int. Cl. F26b 9/00
U.S. Cl. 34—164 **11 Claims**



A cooler for granular material, such as flakes or pellets encountered in the food processing industry. The cooler employs a plurality of vibrating baffles arranged to direct the granular material in a curtain type pattern, while simultaneously tumbling the granular material. A stream of cooling air is directed transversely through the curtain of granular material in order to subject all of the granules to the cooling air.

3,710,454
PORTABLE APPARATUS FOR OPERATING OR SIMULATING OPERATION OF ARTIFICIAL KIDNEYS OR THE LIKE

Eli K. Mellor, 305 Andover Drive, Burbank, Calif.

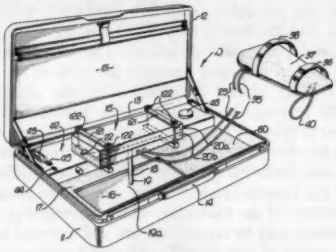
Filed Feb. 22, 1971, Ser. No. 117,559
Int. Cl. G09b 23/28
U.S. Cl. 35—17 **11 Claims**

Portable apparatus for operating or simulating the operation of artificial kidneys comprises:

a. a portable container adapted to be opened and closed,

b. an artificial kidney type device carried by the container, and

c. a support removable from the opened container to be carried by a patient, and transparent tubing on the support for

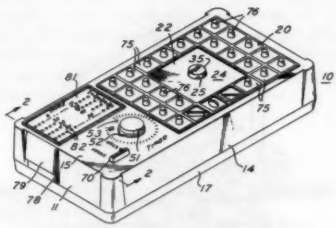


passing liquid selected from the group consisting of blood and artificial blood.

3,710,455
EDUCATIONAL GAME

Thomas K. Liversidge, and Thomas J. Begley, both of c/o Harmonic Reed Corporation, Union Hill Industrial Park, West Conshohocken, Pa.

Filed Nov. 20, 1970, Ser. No. 91,405
Int. Cl. G09b 19/00
U.S. Cl. 35—22 A **9 Claims**

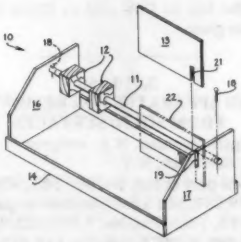


An educational game is provided which includes a housing with an upper face having a plurality of apertures, of geometrical, alphabetical, numerical, animal, bird or other shapes, into which matching game pieces can be inserted. Within the housing a spring impelled plate, controlled by an adjustable timer is provided to discharge the pieces at the end of a predetermined selected time interval. The game can then be reset for the same or for a different time interval.

3,710,456
TEACHING AID

Max E. Jerman, 1563 Miller Avenue, San Jose, Calif.

Filed Aug. 10, 1970, Ser. No. 62,293
Int. Cl. G09b 19/02
U.S. Cl. 35—31 B **1 Claim**

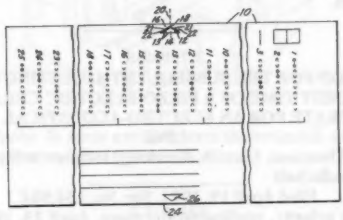


A teaching aid for pre-school pupils consisting of an elongated rod and articles movable along the rod together with a readily removable mask for selectively hiding one or more of the articles from view as they are moved behind the mask.

3,710,457
ANSWER SHEETS

Segwald J. Rechdahl, Fridley, and Donald W. Folske, Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 869,002, Oct. 24, 1969, abandoned. This application July 21, 1971, Ser. No. 164,796
Int. Cl. G09b ; B23b
U.S. Cl. 35—48 A **11 Claims**

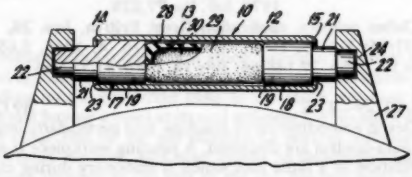


A set of answer sheets for use with an automatic test grading device of the type wherein stacked answer sheets are held by pin means in a position for scanning of answer indication areas placed upon each answer sheet and wherein the scanned answer sheets are fed seriatim from the stack. Each answer sheet has a registration edge and answer indication areas of a predetermined configuration, which answer indication areas are placed upon each sheet in a prescribed relationship to the registration edge. Each answer sheet contains an aperture which is positioned in a prescribed relationship to the answer indication areas and is positioned in a prescribed relationship to and closely adjacent the registration edge. The aperture edge and the registration edge define a holding strip of varying width between the aperture and the registration edge, wherein the narrowest portion of the holding strip defines a separation region of a predetermined width between the aperture and the registration edge. For 4 mil thick sheets the separation region is approximately 22 mils wide. Portions of the aperture edge are shaped for registering each sheet with a pin means adjacent the separation region. Portions of the aperture edge in common with the holding strip and adjacent the registering portions of the aperture edge on opposite sides of the registering portions from the separation region define two clearance edges. The two clearance edges converge toward each other in a direction toward the registration edge and thereby enable the holding strip to deflect to concentrate tension in the separation region when the holding strip of a registered sheet is forced against the pin means. The two clearance edges are preferably straight edges.

3,710,458
SPRING BAR ASSEMBLY

Brian J. Bornor, Ashford, and Douglas J. H. Macgregor, Hayes, both of England, assignors to Timex Corporation, Waterbury, Conn.

Filed Dec. 16, 1970, Ser. No. 98,531
Int. Cl. A44c 5/18
U.S. Cl. 24—265 B **1 Claim**



A spring bar assembly for mounting watch bands or straps to watches comprises a hollow body portion having resiliently backed protruding members extending outwardly from both ends to engage the watch bezel lugs. A resilient material such as silicon rubber is assembled within the body portion to urge the protruding members outwardly therefrom.

3,710,459
BIS(2-CARBOXY-1-THIACHROMON-YL AND -YLOXY)COMPOUNDS

Richard Hazard, Cropston, and John King, Loughborough, both of England, assignors to Fisons Limited, Felixstowe, Suffolk, England

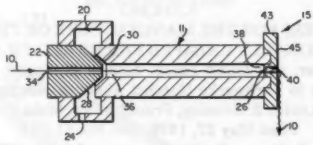
Filed Jan. 27, 1970, Ser. No. 6,311
Int. Cl. A61k 27/00; C07d 65/14
U.S. Cl. 260—327 TH **12 Claims**

Novel bis (2-carboxy-1-thiachromon-yl and -yloxy) compounds indicated for use in the inhibition of the release of toxic products which arise from the combination of an antibody and an antigen.

3,710,460
YARN TREATING JET HAVING A GUIDE FASTENED TO ITS OUTLET END

William Benjamin Segraves, Martinsville, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed March 17, 1971, Ser. No. 125,229
Int. Cl. D02q 1/16
U.S. Cl. 28—1.4 **4 Claims**

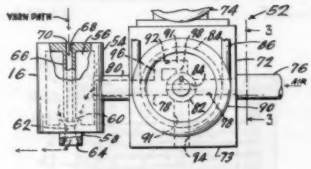


A yarn treating jet includes a yarn guide fastened over the outlet end of the jet. The guide is in the form of a plate having a slot through it coaxial with the yarn passage of the jet. The slot defines parallel walls and has a particular dimensional relationship with the yarn passage in the jet with at least one of the parallel walls and the outer face of the guide serving as guiding surfaces for the yarn passing from the jet.

3,710,461
METHOD AND APPARATUS FOR INTERMITTENTLY TEXTURING YARN

Gustav E. Benson, Edgewood, and Douglas E. Potter, Cumberland, both of R.I., assignors to Owens-Corning Fiberglas Corporation

Filed Nov. 23, 1970, Ser. No. 92,018
Int. Cl. D02g 1/16
U.S. Cl. 28—1.4 **7 Claims**



Apparatus for and method of texturing yarn at spaced apart regions along its length including intermittently supplying fluid under pressure to a yarn texturing nozzle and releasing fluid from the nozzle during time between supply of the fluid.

3,710,462

IMITATION SHEEPSKIN FABRIC

Derek Gilbert Robinson, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 766,239, Oct. 9, 1968, abandoned. This application Aug. 31, 1970, Ser. No. 68,481

Claims priority, application Great Britain, Oct. 10, 1967, 43,187/67

Int. Cl. D04h *11/00*; D06c *13/00*

U.S. Cl. 28—72 P 5 Claims

Imitation sheepskin or lambswool pile fabrics are made by inserting quenched, helically crimped polyethylene terephthalate fibers in a base, shearing the pile and thereafter developing the textured surface, as by tumbling in hot air. The surface texture, which consists of areas of fibers coalesced into pebble-like clumps and substantially fiber-free areas separating the clumps, remains undisturbed by subsequent hot wet treatments such as piece dyeing and washing.

3,710,463

PROCESS FOR THE MANUFACTURE OF THREE-DIMENSIONALLY CRIMPED FIBERS AND FILAMENTS

Gert Buttner, and Ingolf Jacob, both of Bobingen, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed May 27, 1970, Ser. No. 41,051

Claims priority, application Germany, June 3, 1970, P 19 28 243.0

Int. Cl. D02j *1/22*

U.S. Cl. 28—72.17 10 Claims

A process is described for making three-dimensionally crimped fibers and filaments from synthetic high-polymers. Fibers and filaments with a double refraction gradient over their cross-sectional area, which have been obtained by known methods, are drawn and subsequently dried at temperatures within the range of from 50° to 230°C without any shrinkage. After drying, the crimp is developed at temperatures within the range of from 60° to 230°C with the filaments being free from any tension.

3,710,464

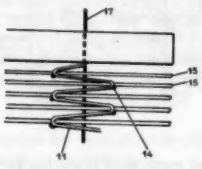
METHOD FOR MOUNTING THE SLATS OF A VENETIAN BLIND IN THE SLAT SUPPORT CORDS AND MEANS FOR CARRYING OUT THE METHOD

Per Lage Persson, Mullsjo, Sweden, assignors to A B Perma System, Mullsjo, Sweden

Filed May 17, 1971, Ser. No. 144,204

Int. Cl. B23p *19/04*; B29d *31/00*

U.S. Cl. 29—24.5 7 Claims



A method of mounting the slats of a venetian blind in the slat support cords of the blind, the slats being provided with holes through which the hoist lines of the blind are passed in a manner such that the lines are located on alternate sides of consecutive cross members of the slat support cords. The ladder cords are given a permanent tendency to fall into a concertina like configuration when no tension load is applied thereto so that subsequent to placing the slats in position and bringing the slats together to form a pack the cross members fall on alternate sides of the hoist line holes. Thus, when threading the hoist lines through their respective holes, the lines automatically pass on alternate sides of successive cross members.

3,710,465

METHOD FOR THE SUBSEQUENT ADJUSTING OF THE TRANSIT TIME OF A PIEZO-ELECTRIC CERAMIC SUBSTRATE FOR AN ELECTRO-ACOUSTICAL DELAY LINE

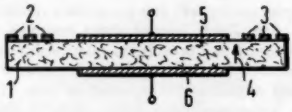
Helmut Thomann, Munich, Germany, assignor to Siemens Aktiengesellschaft

Filed April 19, 1971, Ser. No. 134,984

Claims priority, application Germany, April 23, 1970, P 20 19 780.2

Int. Cl. B01j *17/00*

U.S. Cl. 29—25.35 4 Claims



A method for adjusting or varying the transit time between input and output transducers disposed on a piezo-electric substrate of a polarized ceramic by applying an electrical field in a direction opposed to the residual polarization to decrease the residual polarization or with the direction of residual polarization to increase the residual polarization to cause corresponding changes in the modulus of elasticity of the substrate and thus the speed of propagation of a surface wave between the input and output electrodes.

3,710,466

MACHINE TOOLS AND MORE PARTICULARLY TO DATA-CONTROLLED MACHINE TOOLS

David T. N. Williamson; James Moffat Hutchison; Kenneth C. Wilson, all of London, England; Charles Henri Kahn, and Leon Fayolle, both of Paris, France, assignors to Molins Machine Co., Limited, Deptford, London, England, by said Hutchison, Williams and Wilson

Continuation of Ser. No. 774,545, Nov. 8, 1968, abandoned, which is a continuation of Ser. No. 611,708, Jan. 5, 1967, abandoned, which is a continuation-in-part of Ser. No. 567,243, July 22, 1966, abandoned. This application Sept. 30, 1970, Ser. No. 77,029

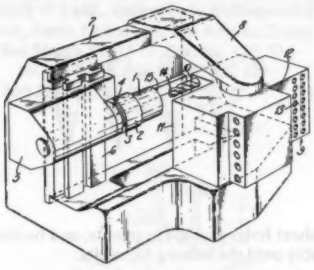
Claims priority, application Great Britain, Jan. 28, 1966, 3,997/66; Feb. 3, 1966, 4,845/66; Feb. 4, 1966, 5,059/66; June 17, 1966, 27,148/66; July 14, 1966, 31,722/66

Int. Cl. B23b *11/00*

U.S. Cl. 29—27 R 89 Claims

Eleven embodiments of machine tool particularly intended for data-control are disclosed. A rotating workpiece is moved in relation to a lathe tool which is stationary during cutting. Tools such as drills are also provided for working on the end face of the workpiece. In some embodiments the workpiece is movable in two directions mutually perpendicular to its rota-

tional axis as well as along that axis. In some embodiments the machine may act as a milling, drilling or boring machine as



well as a lathe. In some embodiments the rotatable workpiece holder may be replaced by a tool holder.

3,710,467

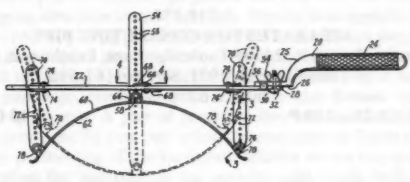
ADJUSTABLE FILE HOLDING DEVICE

James A. Coon, 929 Drever Street, West Sacramento, and Elwin Theobald, Fair Oaks, both of Calif., assignors to said Coon, by said Theobald

Filed Dec. 18, 1970, Ser. No. 99,334

Int. Cl. B23d *71/04*

U.S. Cl. 29—80 **3 Claims**



A file holding device having a shaft with a plurality of slots therein, an apertured rod insertable in each slot, and a flexible file attached to the ends of the apertured rods which adjust the curvature of the flexible file by lowering or raising the rods through the slots in the shaft.

3,710,468

CUTTING TOOLS

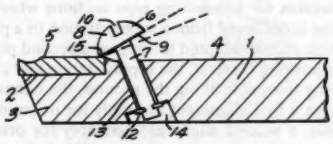
Roger Calvert, 13 Hyperion Road, Germiston, Transvaal, South Africa

Filed Oct. 12, 1971, Ser. No. 188,074

Claims priority, application South Africa, Oct. 15, 1970, 70/7024

Int. Cl. B26d *1/00*

U.S. Cl. 29—96 **10 Claims**



A cutting tool comprising a stock having a recessed end shaped to receive a cutting insert in the recess, a rotatable pin extending into a transverse hole in the stock adjacent the recess and having a head at its end adjacent the recess, a stop at the other end of the pin adapted to prevent withdrawal thereof from the hole, said head having an underside located in a plane inclined to the axis of the pin, the pin being such that upon rotation thereof an insert located in the recess is clamped therein.

3,710,469

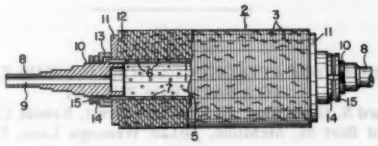
OILING ROLLER

Novoru Kitazawa, 4-10, 2-chome, Daitakubo, Urawa-shi, Japan

Filed Nov. 4, 1970, Ser. No. 86,740

Int. Cl. B21b *31/08*

U.S. Cl. 29—125 **3 Claims**



An oiling roller for oiling metal sheet. This oiling roller comprises a hollow arbor having a plurality of small holes penetrating the arbor wall on the circumference thereof, the elastic porous pad in a cylindrical form placed over the circumference of said hollow arbor, and means for pressing the circumferential portion of said cylindrical pad in the axial direction of the cylinder.

3,710,470

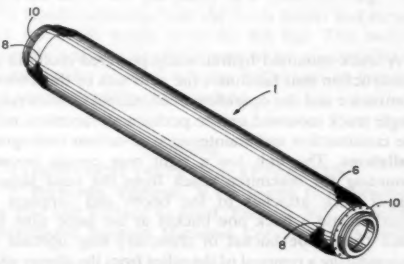
JACKETED PRESS ROLL

Kenneth V. Krake, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sept. 3, 1970, Ser. No. 69,279

Int. Cl. B21b *31/08*

U.S. Cl. 29—131 **4 Claims**



A press roll assembly including a fabric sleeve shrunken tightly around the periphery and retained between the ends of the shell of the roll. The roll at its axial extremities has tapered peripheral zones to aid in maintaining sleeve tension and position.

3,710,471

METHOD OF MAKING A COMPOSITE BEARING RING

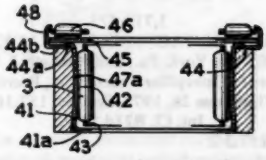
Alfred Pitner, Paris, France, assignor to Nadella, Rueil-Malmaison, France, a part interest

Filed April 6, 1971, Ser. No. 131,759

Claims priority, application France, April 8, 1970, 7012709

Int. Cl. B21h *1/12*

U.S. Cl. 29—148.4 R **8 Claims**



A composite outer ring for a needle bearing comprising an inner sleeve of hardened thin sheet metal and a non-hardened

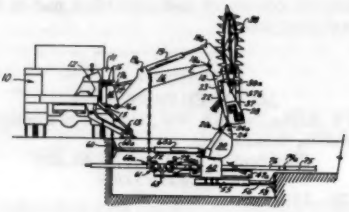
outer collar which is a tight fit on the sleeve. The collar serves to deform the hardened sleeve so as to rectify any deviation of the shape of the sleeve inner face, which constitutes a raceway, from the desired shape due to distortion of the sleeve subsequent to the hardening of the sleeve. The shape of the outer face of the collar depends on both the desired shape of the raceway and the configuration of the cavity of the part receiving the collar.

3,710,472

METHOD OF ATTACHING A WORKING IMPLEMENT TO A BACK HOE BUCKET

Gerard S. Gremillion, 50 East 54th Street, Kansas City, Mo., and Bert M. McMillin, 10120 Wenonga Lane, Leawood, Kans.

Filed May 3, 1971, Ser. No. 139,704
Int. Cl. B21k *19/00*; B23p *19/00*
U.S. Cl. 29—148.3 **1 Claim**



A truck mounted hydraulically powered multiple purpose construction unit facilitates the activities of the underground contractor and the operation of municipal utilities requiring a single truck mounted unit to perform all functions relative to the construction and maintenance of various underground installations. The unit has a right rear corner boom turret mounting for maximum reach from the road shoulder. A dipper stick attaches to the boom and supports both a trencher and a back hoe bucket at the same time thereon. Each (back hoe bucket or trencher) may operate without necessitating a removal of the other from the dipper stick.

The back hoe bucket is constructed to cooperate with a number of tools or implements including a unique pipe-pusher by providing a method for quickly attaching the back hoe bucket to the corresponding implement. The implement then may be operatively positioned in the correct working environment by hydraulically positioning the boom and the dipper stick.

The selective mounting of the hydraulically movable boom and the location of the stowed position of the dipper stick, back hoe bucket, trencher and accessory tools and implements while on the truck occupy an optimum position with respect to movement of the boom about the substantially upright axis at the turrent mount and take advantage of the maximum articulated positions of the dipper stick, boom and the back hoe bucket.

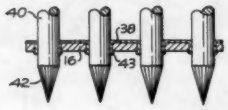
3,710,473

METHOD OF MANUFACTURING A HEAT EXCHANGER

Merle G. McElwain, York, Pa., and Kenneth J. Miller, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 28, 1971, Ser. No. 157,169
Int. Cl. B21d *53/02*
U.S. Cl. 29—157.3 R **4 Claims**

A method for manufacturing a heat exchanger comprises the steps of forming holes in a metal tube sheet in a desired pattern, placing a sheet of brazing foil over the tube sheet, piercing the foil with a plurality of punches aligned with the tube sheet holes, thereby staking the brazing foil segments through the tube sheet holes, pressing the tube ends through



the tube sheet holes and foil segments, and heating the end of the assembly until the brazing foil melts.

3,710,474

VANADIUM-MODIFIED TANTALUM FOIL

Marvin F. Kelly, Grayslake, Ill., and John B. Lambert, Towson, Md., assignors to Fansteel Inc.

Filed May 22, 1970, Ser. No. 39,905
Int. Cl. H01g *1/01*; C22c *27/00*
U.S. Cl. 29—183 **3 Claims**

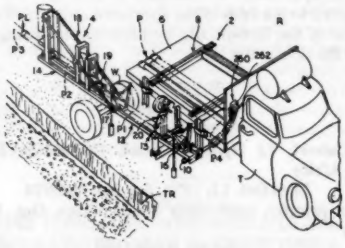
Controlled amounts of vanadium are added to tantalum prior to fabrication into foil for use in capacitors to provide more uniform capacitance values with variations in temperature.

3,710,475

APPARATUS FOR CONNECTING PIPE

Herman Bronstein, 24305 Tunbridge Lane, Beachwood, Ohio

Filed July 12, 1971, Ser. No. 161,492
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 P **12 Claims**

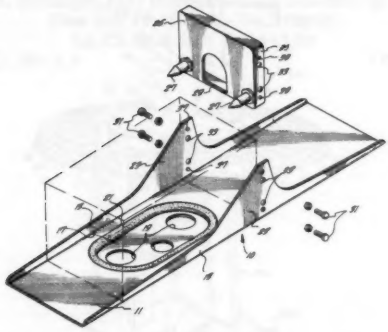


An apparatus for connecting pipe sections wherein a first pipe section is delivered from a supply station to a position on a connection station adapted to support a second pipe section at another position thereon, the supply station and connection station being moveable along the ground, the connection station includes a first alignment assembly for orienting the first pipe section, a second alignment assembly for orienting the second pipe section, a securement assembly being selectively actuatable to position the second pipe section in axial alignment with the first pipe section, means for connecting the pipe sections in end-to-end relation, and wherein the alignment assemblies are arranged to guide the coupled pipe sections axially along the connection station upon movement of the apparatus along the ground such that the first pipe section is moved to the former position of the second pipe section and a third pipe section is delivered from the supply station to the former position of the first pipe section on the connection station for coupling to the first pipe section.

3,710,476
AVIONIC TRAY

Robert A. Hollingsead, Yorba Linda, and Clyde Robert Pryor, Anaheim, both of Calif., assignors to Hollingsead-Pryor Enterprises, Inc., Santa Fe Springs, Los Angeles County, Calif.

Filed March 18, 1971, Ser. No. 125,536
Int. Cl. B23p *19/00*; B01d *51/00*
U.S. Cl. 29—200 J 10 Claims

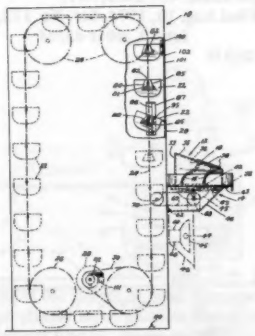


An avionic tray is disclosed having a backplate secured between a pair of vertical uprights of the tray with the aid of self-jigging structure located thereon. The vertical uprights include a plurality of jig pins formed on the interior sides thereof which are adapted to snap into a plurality of registering holes formed in the backplate. The jig pins are formed by a half-shear punch process, while the holes are also formed by a punching process. A pair of precision dies are used to accurately locate the jig pins and holes to ensure precise linear and angular positioning of the backplate relative to the tray prior to securing the backplate to the uprights with rivets, bolts or other attachment means.

3,710,477
PARTS DISPENSER AND POSITIONER

Kenneth O. Frawley, 78 Sweetgum Road, Levittown, Pa.

Filed Jan. 11, 1971, Ser. No. 105,364
Int. Cl. H01r *43/00*
U.S. Cl. 29—203 B 9 Claims

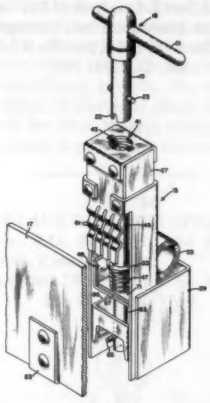


A portable parts dispenser having removable parts storage buckets mounted on a conveyor chain and having tilt and stopping means integral with the buckets, and also having a master display board illuminated by a plurality of video wires exposed selectively to light source by a shutter synchronized with the conveyor chain, which display board indicates the correct location in a printed circuit board for particular parts.

3,710,478
BRUSH REPLACEMENT DEVICE

Gerd E. Krulls, Scotia, and William H. Ruth, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed March 25, 1971, Ser. No. 128,344
Int. Cl. H02k *15/00*; F16c *33/00*
U.S. Cl. 29—205 R 5 Claims

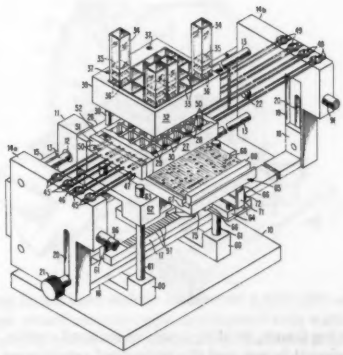


A brush replacement device for a dynamoelectric machine comprising a brush holder and a removable handle which is keyed to the brush holder. The brush holder is locked to a bus bar supported about the periphery of a collector ring. The removable handle is inserted into the brush holder and turned to unlock the brush holder from the bus bar. This motion simultaneously activates a spring means which secures a brush in the brush holder while it is being withdrawn or inserted about the periphery of the collector ring.

3,710,479
COMPONENT INSERTION APPARATUS

Edward T. Bernardo, Endicott, N.Y.; Joseph G. Cherochak, Jessup, Pa., and Richard G. Sipel, Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

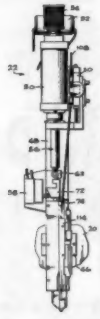
Filed March 1, 1971, Ser. No. 119,640
Int. Cl. H05k *13/04*; B23q *7/10*
U.S. Cl. 29—203 B 10 Claims



Apparatus for releasing multi-lead components singly from each of a plurality of magazines and directing the released set of components to predetermined groups of perforations in a circuit panel for insertion of the component leads. Magazines can be readily moved to different positions on the panel to

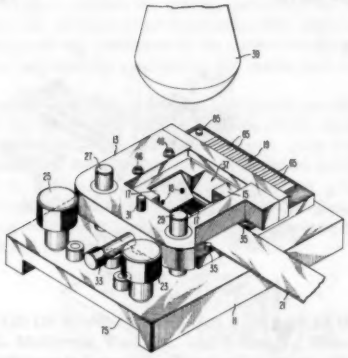
facilitate the assembly of various circuit arrangements, and the circuit panel to receive the components is moved to such a position by the component dispensing mechanism at the time the set of components is to be released from the respective magazines.

3,710,480
TERMINAL PIN INSTALLING MACHINE
James F. Royse, and Bert J. Lee, both of Los Angeles, Calif., assignors to Warwick Electronics Inc., Chicago, Ill.
Filed June 18, 1970, Ser. No. 47,367
Int. Cl. H01r *9/00*
U.S. Cl. 29—203 **8 Claims**



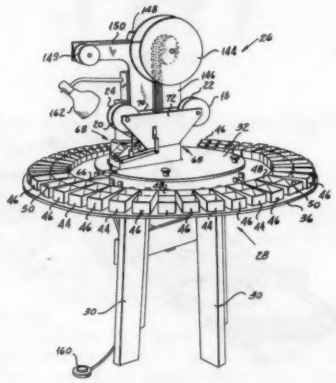
The terminal pin installing machine employs straightened pin stock which is cut to length and driven through an imperforate substrate insulation board. The nose, with a terminal pin guide channel therein, directly abuts the board during the insertion stroke to permit straight pin driving directly through the unperforated board.

3,710,481
TERMINAL ALIGNMENT AND CONNECTION DEVICE FOR CONDUCTORS OF A MULTICONDUCTOR CABLE
Robert Roy Stroh, Downingtown, Pa., assignor to Burroughs Corp., Detroit, Mich.
Filed March 24, 1971, Ser. No. 127,541
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 B **10 Claims**



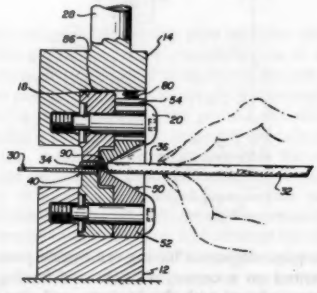
A floating frame, holding a pair of inclined combs, accepts a printed circuit board and the individual conductors of a multiconductor cable. The frame is movable horizontally by a micrometer adjustment device and vertically by torque limit knobs to align and clamp the conductors of the cable into a bonding position on the circuit board after the combs have individually engaged the conductors of the cable.

3,710,482
SEMI-AUTOMATIC SEQUENCING MACHINE
John G. Grafford, Dorr, Mich., assignor to Rowe International, Inc., Whippany, N.J.
Filed Aug. 17, 1971, Ser. No. 172,429
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 B **20 Claims**



A semi-automatic sequencing machine for facilitating the formation of a string of electrical components in a predetermined sequence with a certain spacing therebetween in which an operator removes components two at a time from bins arranged in a predetermined sequence on an index table, drops them into guides which deposit them on pitch belts with said certain spacing between successive teeth, and then actuates a control concomitantly to index the table through a distance corresponding to the space occupied by the bin or bins containing the removed components and to advance the pitch belts two components by means of transfer wheels which carry the leads of two components into the nips between pairs of pressure wheels which apply tapes to the leads to form the string which extends to a take-up reel.

3,710,483
SPLIT WIRE GUIDE
Thomas Edward Morgan, Cleveland Heights; George Frank Kaminski, South Euclid, and Francis J. Mraz, Macedonia, all of Ohio, assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Aug. 18, 1971, Ser. No. 172,685
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 D **6 Claims**



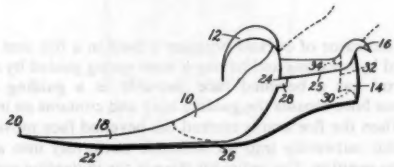
A wire guide for facilitating the entry of a stripped wire end into a terminal prior to crimping of the terminal onto the wire.

The guide is split into sections mounted to the crimp die sections. The sections are separated to allow the crimped terminals to be removed from the crimp dies. The split faces provide an inclined surface to aid the feeding of the terminals out of the crimp die. Also, exposed edges of the guide are rounded to prevent shearing of the wire on movement of the crimp die.

3,710,484
SKIER S BRACE
Kent A. Heitzinger, 1217 Hawthorne Lane, Glenview, Ill.
Filed Feb. 19, 1971, Ser. No. 116,995
Int. Cl. A43b *3/00*; A41d *13/00*
U.S. Cl. 36—1.5 **7 Claims**

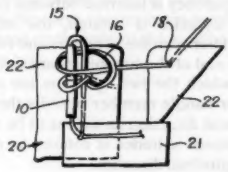
A simply constructed skiing aid device is disclosed comprising a molded form-fitting brace or insert which fits between the skier's foot and back part of the ski boot and extends upwardly to embrace the back or calf part of the leg. The device is contoured to fit the calf muscle comfortably and the lower portion is narrow to fit and move about the Achilles heel so that by leaning backward thereagainst the weight upon the front of the ski is lessened for better control of the tip of the ski in maneuvering and reduction of snow penetration.

3,710,485
ONE-PIECE SLIPPER
Henry D. Irwin, 1107 Cherokee Avenue, Bartlesville, Okla.
Filed Oct. 12, 1971, Ser. No. 188,230
Int. Cl. A43b *3/14*
U.S. Cl. 36—11 **2 Claims**



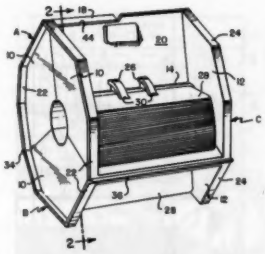
A foot covering of the slipper or moccasin type formed from a single sheet of pliable material comprising the entire sole and upper, a forward fold of the sheet of material forming a sheath adapted to receive the forward portion of a foot including the instep and also forming a forward extension of the sheath resulting in a tapered cap equal in length to approximately one-half the length of the foot and terminating in a substantially pointed tip, the fold having complementary edges at the shoe tip end and outer aspect of the shoe united as a seam extending at sole level from around the shoe tip and of the shoe to a point adjacent to the portion of the shoe adapted to receive the ball of the foot and then diagonally upward to the mouth of the shoe on the outer side of the instep portion; a reinforcing tongue bridges the seam at the mouth of the shoe and a first eared portion of triangular shape extends rearwardly from the sheath and spanning the forward portion of the mouth of the shoe; the sheet is also provided with a rear fold which forms the heel receiving portion of the shoe and which is closed at the rear end thereof by a continuous right-angled seam having horizontal and vertical seam portions, the vertical seam portion having a reinforcing tongue bridging its upper end, the horizontal seam portion having a lower curved portion in extension of the plane of the sole of the shoe defining an enlargement in the lower rear portion of the shoe and constituting a heel-fitting pocket, the rear fold having a second eared portion of triangular shape extending above the heel at the rear of the shoe, the two triangular eared portions being adapted to assist in pulling the shoe onto the foot.

3,710,486
SHOE LACE SECURING APPARATUS
Alexander Revny, P.O. Box 431, 944 3rd Avenue, Hope, British Columbia, Canada
Filed Dec. 18, 1970, Ser. No. 99,601
Int. Cl. A43b *11/00*
U.S. Cl. 36—50 **1 Claim**



Apparatus for securing one end of a lace to a shoe so that the shoe can be tied by lacing without the need to knot the lace ends together.

3,710,487
INDEX CARD HOLDER
Ira Saltz, Greenlawn, N.Y., assignor to Oxford Pendaflex Corporation, Garden City, N.Y.
Filed Sept. 23, 1971, Ser. No. 183,131
Int. Cl. G09f *11/06*
U.S. Cl. 40—72 **7 Claims**



A rolling index card holder comprises a plurality of cradle-like sectors which include opposing faceted side walls extending from a core sector. The faceted side walls provide a means for supporting the holder and the sectors are hinged together so that the card holder may be opened to provide convenient access to all of the index cards within the device. Preferably, the holder is mounted from a standard plastic material with the hinges between adjacent sectors being formed of a thinner-gauge plastic.

3,710,488
MICROFICHE VIEWING DEVICE

Carlton D. Baxter, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

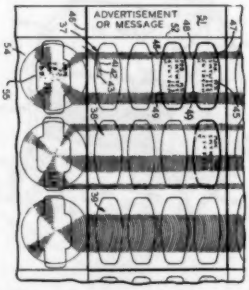
Filed Nov. 25, 1970, Ser. No. 92,617
Int. Cl. G09f 11/30
U.S. Cl. 40—63 A 11 Claims

A portable or hand-held viewer comprises an assembly of two cylinders, one of which is transparent, which are retained on the end of a support means or handle member. When a microfiche transparency is inserted between the cylinders and the transparent cylinder is rotated, the microfiche transparency is moved between the cylinders and relative to a viewing station in the end of the support means or handle member. The manner in which the two cylinders are mounted on the support means or handle member permits them to be moved as a unit in a lateral direction as well as to be moved as a unit while the transparent cylinder is rotated to move the transparency in a longitudinal direction.

3,710,489
WATCHBAND CALENDAR WITH JEWELRY-LIKE SURFACE

Vincent Anderson, Chicago, Ill., assignor to Chicago Etching Corp., Chicago, Ill.

Filed Sept. 1, 1971, Ser. No. 176,998
Int. Cl. G09d 3/00
U.S. Cl. 40—107 6 Claims

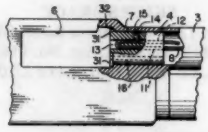


A sheet of metal is abraded by a spinning disk while the sheet is moved longitudinally with respect to the disk. The disk thereby forms an elongated pattern of nested hyperbolic or somewhat semicircular lines. These score lines provide a background of light reflecting areas which change and move as the watchband tilts and tips with normal wrist movement.

3,710,490
SAFETY DEVICE FOR FIREARMS

Earl J. Cornett, and Gene E. Cornett, both of 1107 Bellview Avenue, Barbertown, Ohio

Filed July 20, 1970, Ser. No. 56,451
Int. Cl. F41c 27/00, 17/08
U.S. Cl. 42—1 N 14 Claims

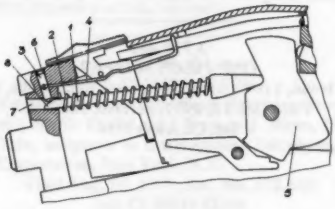


A safety device for inserting in the barrel of a firearm to prevent anyone from cocking, loading or firing the gun as long as the device is in position. The device comprises a plug which fits in each end of the barrel connected together by a flexible cable or similar member which is locked in position at the muzzle end of the gun. Both plugs are provided with vent openings to permit air circulation through the barrel when the device is installed. The plug which fits into the chamber has special radial flanges which engage the cartridge extractor and prevent the gun from being cocked. A special telescoping cable extension is provided on the muzzle end to hold the connecting cable taut while the device is being locked in the barrel.

3,710,491
INDICATOR OF COCKED POSITION IN A FIRE ARM TO BE OPENED BY BREAKING

Erkki Vesamaa, Jyvaskyla, Finland, assignor to Valmet Oy, Helsinki, Finland

Filed March 15, 1971, Ser. No. 124,249
Int. Cl. F41c 27/12, 27/00
U.S. Cl. 42—1 C 3 Claims



An indicator of cocked position is used in a fire arm to be opened by breaking and having a main spring guided by a rod. The rod has a bevelled face movable in a guiding bore. Another bore crosses the guiding bore and contains an indicator. When the fire arm is cocked the bevelled face moves the indicator outwardly into an indicator outwardly into an indicating position. The indicator stays in the indicating position until the fire arm is fired. Then the rod moves out of the way of the indicator and the indicator is moved by a spring inside its bore.

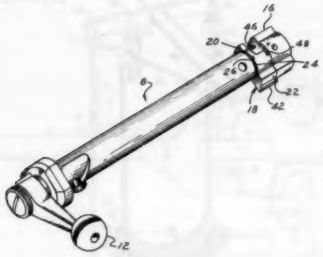
3,710,492
TRAVEL GUIDE FOR BOLT ACTION RIFLES

Frank B. Tirrell, Williamsburg, Mass., assignor to Emhart Corporation, Bloomfield, Conn.

Filed Dec. 2, 1970, Ser. No. 94,340
Int. Cl. F41c 11/00
U.S. Cl. 42—16 5 Claims

In a bolt action rifle. a guide for reciprocating travel of the bolt having lock lugs fixed to and extending radially from the

forward end thereof, and a gas shield or baffle in the form of radially extending lugs pivotally carried by the bolt adjacent the lock lugs. The pivotable gas shield includes a projection which extends outwardly of the shield into slidable engagement in a guideway or recess extending longitudinally in the



receiver a distance at least equal to the length of travel of the bolt. Interengaging means between the lock lugs and gas shield limits rotation of the gas shield to a predetermined angle which enables locking and unlocking rotation of the bolt while serving to restrain the bolt against excessive rotation and/or tilting as it is being operated by the bolt handle.

3,710,493

DROPPING BREACH BLOCK ACTION FOR SPORTING GUNS

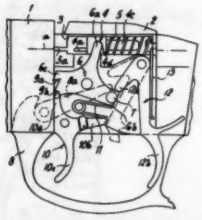
Adrian Gramiger, Pany, and Willy Baumann, Ebnetstrasse 40, Horgen, both of Switzerland

Filed June 12, 1970, Ser. No. 45,863

Claims priority, application Switzerland, June 17, 1969, 9348/69

Int. Cl. F41c *11/04*

U.S. Cl. 42—23 **10 Claims**



The dropping breech block action has a cocking mechanism and a movable breech block. A firing pin, a firing pin spring and a trigger are mounted in the breech block. An actuating element is engaged in the breech block and is actuable independently of the cocking mechanism. This actuating element acts on one of the two abutments between which the firing pin spring is engaged, and is operable to actuate the one abutment, while the breech is closed and the firing pin spring is tensioned, to relax, at least approximately completely, the tension of the firing pin spring without firing of the gun. The actuating element is further operable, through the one abutment, to re-tension the firing pin spring.

3,710,494

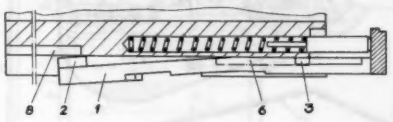
EJECTOR MECHANISM FOR BREAKDOWN FIREARMS

Timo Hyytinen, Jivaskiya, Finland, assignor to Valmet Oy, Helsinki, Finland

Filed March 15, 1971, Ser. No. 124,250

Int. Cl. F41c *15/06*

U.S. Cl. 42—47 **2 Claims**



A cartridge case ejector of a breakdown firearm has an oblong guiding groove on the side of the body of the firearm. The ejector has an oblong and flexible stem with a prong at its rear end which is adapted to engage the base of the cartridge case. The guiding groove has shoulder grooves adjacent the base of the cartridge. The stem has guiding shoulders adjacent the prong which are adapted to move in the shoulder grooves. The front end of the stem carries a pin adapted to engage a depression provided on the side of the guiding groove opposite the cartridge case base.

3,710,495

SELF-LOADING FIREARMS

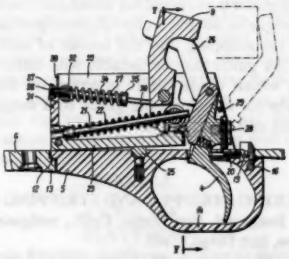
Norbert Ziegler, Rottwel, and Elmar Schefold, Oberndorf, both of Germany, assignors to Heckler & Kock G.m.b.H., Germany

Filed Feb. 2, 1971, Ser. No. 111,974

Claims priority, application Germany, Feb. 4, 1970, P 20 04 968.7

Int. Cl. F41c *19/00, 11/00*

U.S. Cl. 42—69 B **17 Claims**

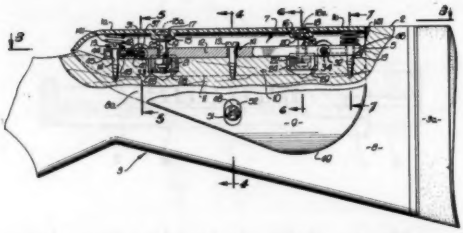


A self-loading firearm having a bolt slidably mounted in the longitudinal direction of the barrel and a recoil spring loading the bolt. The recoil spring is located outside of the path of the bolt and is connected with the bolt by means of at least one movable intermediate member.

3,710,496
FIREARM ADJUSTABLE CHEEK PIECE

Frank A. Packmayr, Los Angeles; Jack R. Farrar, Whittier, and John Gerick, La Verne, all of Calif., assignors to Mershon Company, Los Angeles, Calif.

Filed Sept. 8, 1970, Ser. No. 70,182
Int. Cl. F41c *23/00*
U.S. Cl. 42—71 R 16 Claims

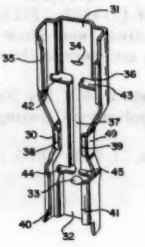


Gunstock having a movable cheek piece carried on the side thereof which is adjustable to variably accommodate the gunstock in cradled position against a user's face.

3,710,497
MAGAZINE LOADING GUIDE

Daniel D. Musgrave, 8201 Caraway Street, Cabin John, Md.

Filed June 11, 1971, Ser. No. 152,072
Int. Cl. F42b *39/06*
U.S. Cl. 42—87 4 Claims



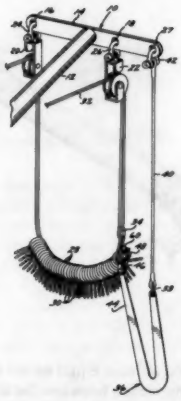
A loading guide is provided for attachment to the casing of a cartridge magazine so that a clip of cartridges can be correctly positioned for stripping into the mount of said magazine. In order that the guide may be useable with different models of magazines, which might differ in shape or dimensions, different means for attaching the guide to a magazine are provided at each end of the guide.

3,710,498
PURSE RING STRIPPER AND STRIPPING METHOD

Sverre M. Jangaard, San Diego, Calif., assignor to Campbell Industries, San Diego, Calif.

Filed Sept. 1, 1971, Ser. No. 177,069
Int. Cl. A01k *73/12*
U.S. Cl. 43—4.5 12 Claims

A purse ring stripper and stripper method which facilitate stripping a closely grouped plurality of purse rings from a loop of purse line used in a purse seining operation for catching fish. The stripper is adapted to be suspended adjacent the loop of purse line for swinging movement, and includes an elongated threading portion for detachable coupling to the purse line outwardly of the group of purse rings. When the adjacent portion of the purse line loop is slacked off, the suspended stripper and rings move relative to one another and thread the threading portion through the rings. The rings slide over the threading portion and collect upon the stripper where they are supported for later separation of the purse line from the purse rings. The rings are subsequently automatically sequentially

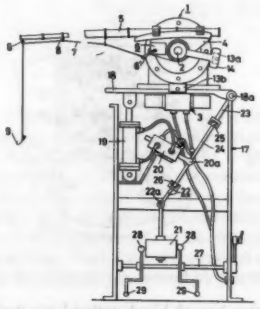


slid off the stripper when the net is hauled in. This method eliminates hoisting of the purse rings high above the fishing vessel for placement upon the deck or upon a pole or other collection device fixed to the vessel. In one embodiment the stripper is lowered generally simultaneously with slacking of one side of the purse line loop to facilitate transfer of the rings onto the stripper.

3,710,499
AUTOMATIC FISHING MACHINE

Nobuo Tadano, Miyagi, Japan, assignor to Suzuki Iron Works Company Limited, Mujagi-ken, Japan

Filed March 30, 1971, Ser. No. 129,249
Claims priority, application Japan, April 23, 1970, 45/34503; July 7, 1970, 45/58953
Int. Cl. A01k *79/00*
U.S. Cl. 43—6.5 3 Claims



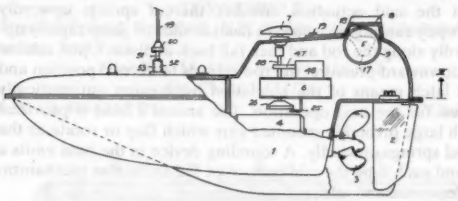
Installed alongside the gunwale of a fishing boat, this machine automatically repeats a fixed cycle of fishing operation which comprises the steps of keeping the fishing pole tip at a fixed height from the surface of the water while waiting for a fish to bite and, upon sensing the bit of a fish at the hook, swinging up the fishing pole to hoist the fish from the sea into the air, subsequently causing the fish to come free of the hook in mid-air above the boat's deck and fall on the deck and, with the release of tension in the line, causing the fishing pole to be immediately lowered to the original position for the next bite.

3,710,500

SELF-PROPELLED FISHING FLOAT WITH LINE RELEASE MECHANISM

Jose Baya Pena, Carretera de Sans, 277 Barcelona, Spain

Filed Aug. 5, 1971, Ser. No. 169,339
Claims priority, application Spain, Aug. 6, 1970, 382.921
Int. Cl. A01k *93/00*
U.S. Cl. 43—17.5 **7 Claims**



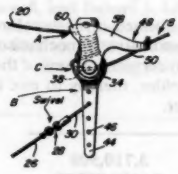
A self-propelled fishing float, with cylinders mounted therein that carry spring-biased pistons therein. A sinker, lead line and hook are received within each cylinder, with the piston depressed against its spring, the sinker being held in place by a lever mechanism connected to a timer. At a predetermined time after launch of the float the timer actuates the lever mechanism to release the sinkers, whereupon the spring-biased pistons discharge the sinkers with their attached hooks into the water.

3,710,501

RELEASABLE TROLLING WEIGHT

Richard S. Ware, Jr., 5001 Seminary Road, Apt. 1600, Alexandria, Va.

Filed Nov. 4, 1971, Ser. No. 195,715
Int. Cl. A01k *93/00, 95/00*
U.S. Cl. 43—43.11 **9 Claims**



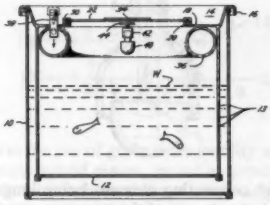
A strike and pull responsive drop line fastening and automatic releasing device wherein an upper end of a weighted drop line is retentively but releasably and slidingly oriented with a predetermined portion of the trolling line comprising a one piece non-corrodible adaptor characterized by a median body portion having an open ended passage for the trolling line threaded therethrough. A complemental spindle is integrally joined with an upper part of the body portion and forms an upper lever arm around which are wound a few turns of the line. A companion shank is joined with a bottom side of the body portion and forms a lower lever arm to which the drop line is releasably attached. A bridle-like guard is pivotally mounted on the body portion and includes a line receiving eye and upstanding plates which engage the sides of the upper lever arm and prevent unwinding of the line from the spindle when the guard is in closed position.

3,710,502

LIVE BAIT BUCKET WITH WATER OXYGENATING MEANS

Jep T. Bracey, 218 Acacia Street, Lake Jackson, Tex.

Filed July 13, 1970, Ser. No. 54,425
Int. Cl. A01k *63/00*
U.S. Cl. 43—56 **3 Claims**



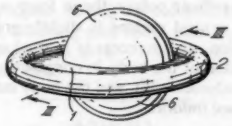
A live bait bucket having an outer bucket and an inner perforated bait receptacle removably supported in and closing the bucket and having a hinged cover for sealingly closing the receptacle and provided with a pressure container for oxygen and a valve which may be operated from the exterior of the receptacle to allow oxygen to be introduced from the container into the receptacle to supply oxygen to water therein.

3,710,503

PLAYTHING

Patrick Rylands, London, England, assignor to Rosedale Industries Limited, London, England

Filed Jan. 26, 1972, Ser. No. 220,822
Claims priority, application Great Britain, Feb. 1, 1971, 3,630/71
Int. Cl. A63h *33/00*
U.S. Cl. 46—1 R **3 Claims**



The specification discloses a plaything consisting of a flat plate with an aperture therein and flange means on both sides of the plate disposed in spaced relationship with such aperture, and a pair of joined members disposed on and slidably engaging the opposite sides of said plate, such members being joined together by an element passing through and of smaller dimension than the aperture in the plate, the arrangement being such that the two joined members are free to move together in relation to the plate without any part of the aperture in the latter becoming exposed.

3,710,504

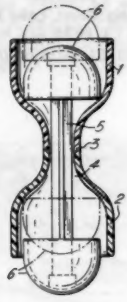
PLAYTHING

Patrick Rylands, London, England, assignor to Rosedale Industries Limited, London, England

Filed Jan. 26, 1972, Ser. No. 220,821
Claims priority, application Great Britain, Feb. 1, 1971, 3629/71
Int. Cl. A63h *33/00*
U.S. Cl. 46—1 R **4 Claims**

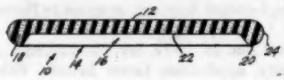
The specification discloses a plaything which comprises a pair of open-ended receptacles with the blind ends thereof connected together so as to provide a passageway which communicates the interiors of the two receptacles, a pair of mem-

bers which will fit into said receptacles, and an element connecting said members together and extending through said



passageway, said connecting element being longer than the passageway so that only one of the members at a time can be fully contained in its associated receptacle.

3,710,505
AERODYNAMIC TOY
Carl J. Linenfelser, Brooklyn, Mich., assignor to Brooklyn Products, Inc., Jackson, Mich.
Filed Jan. 4, 1971, Ser. No. 103,568
Int. Cl. A63h *27/00*
U.S. Cl. 46—74 D **2 Claims**

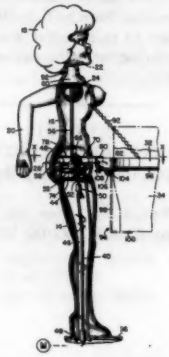


An aerodynamic toy of a generally flat circular configuration adapted to glide through the air when thrown with a rotational movement imparted thereto, the configuration producing an aerodynamic lift, and the material of the toy consisting of a flexible, resilient polyurethane foam wherein the foam density in the central regions is slightly greater than at the peripheral region, and a recess is formed on the underside. The configuration of the body in conjunction with the recess producing aerodynamic lift, and the body material permitting the toy to be used indoors.

3,710,506
ANIMATED TOY
Ernest L. Thornell, Horicon, Wis., assignor to Marlin Toy Products, Inc., Horicon, Wis.
Filed March 1, 1972, Ser. No. 230,648
Int. Cl. A63h *5/00*
U.S. Cl. 46—118 **9 Claims**

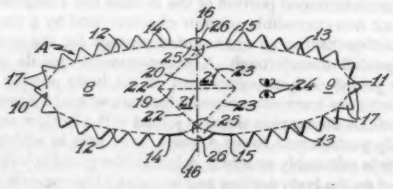
An animated plastic toy comprises a hollow base representing an animal's body which contains an animation mechanism or actuating means. A manually movable vertical rod or operating handle connected to the mechanism extends upwardly from the body. A lightweight movable member representing the animal's head is slidably mounted on the rod and normally rests on a spring-load movable actuation member of the animation mechanism extending from the base. When the rod is pressed axially downwardly for a short predetermined distance, the said actuation member of the animation mechanism and the animal's head move downwardly therewith. Further downward movement of the rod then triggers a releasable latch means in the animation mechanism so that the said actuation member thereof springs upwardly abruptly causing the animal's head to slide or jump rapidly upwardly along the rod and then fall back in place. Upon release of downward pressure, the rod returns to normal position and the latch means of the animation mechanism automatically resets for the next operation. The animal's head is provided with large pivotably mounted ears which flop or rotate as the head springs upwardly. A sounding device in the base emits a sound each time the said portion of the animation mechanism is depressed and released.

3,710,507
ANIMATED, DRINK MIXING MANNEQUIN
Donald B. Poynter, 7 Arcadia Place, Cincinnati, Ohio
Filed Feb. 12, 1970, Ser. No. 10,850
Int. Cl. A63h *13/02*
U.S. Cl. 46—136 **22 Claims**



A mannequin body formed of flesh-colored flesh-like soft plastic or rubber, motor-driven mechanism which imparts gyratory movements to certain portions of the body and an associated receptacle holder, thereby to mix the contents of a receptacle in the holder.

3,710,508
GAME PIECE
Edwin C. McLaren, 10655 Vessey Road, Bloomington W., Minn.
Filed March 10, 1971, Ser. No. 122,885
Int. Cl. A63h *3/14*
U.S. Cl. 46—154 **3 Claims**



A strip of flexible material such as paperboard and the like includes end portions shaped to similar opposed jaws. A fold

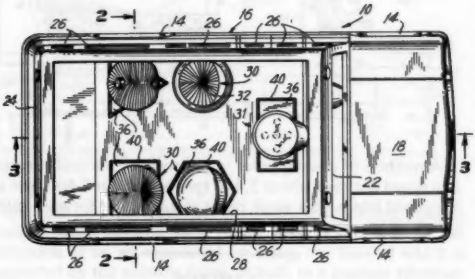
line extends longitudinally of said strip intermediate the side edges thereof, and fold lines extend from the ends of said first mentioned fold line to opposite side edges of the strip forming triangular areas. When the sides of the strip adjoining the apexes of the triangular areas are pressed inwardly, the triangular areas remain flat, flexing the strip into opposed jaws having inner opposed concave surfaces which can be swung together or apart by variations in inward pressure.

3,710,509

TOY VEHICLE

Norman Spiegel, New York, N.Y., assignor to Nasta Industries, Inc., New York, N.Y.

Filed Feb. 15, 1972, Ser. No. 226,638
Int. Cl. A63h *33/26*
U.S. Cl. 46—244 R **16 Claims**



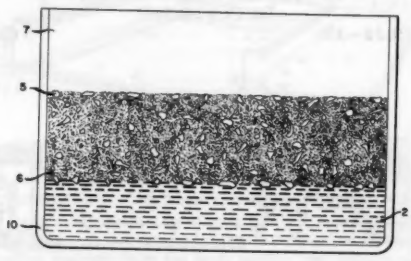
Toy vehicle having a reversible drive motor connected with at least one of a plurality of wheels, an operator figurine representing the operator and a plurality of passenger figurines representing passengers thereof wherein each of the figurines has a geometrically shaped base portion and the vehicle has matching sockets therefor together with switch means for the drive motor responsive to positioning of the operator figurine and means responsive to movement of the vehicle to provide up and down motion of at least one of the passenger figures.

3,710,510

PLANT GROWTH MEDIA AND METHODS

Paul R. Tully, Lowell, and Robert J. Lippe, Methuen, both of Mass., assignors to Cabot Corporation, Boston, Mass.

Filed May 10, 1971, Ser. No. 141,774
Int. Cl. A01g *9/00*
U.S. Cl. 47—58 **14 Claims**



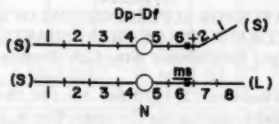
Methods of germinating seeds and growing easily transplantable seedlings are disclosed based upon the use of loose pulverulent bed materials the basic ingredient of which consists of a relatively stable form of finely dispersed aqueous liquid the individual droplets of which are enveloped and held within a coating network of smaller, strongly hydrophobic colloidal oxide particles. Methods of producing the basic ingredient are also disclosed as well as preferred proportions of various components and optimized pulverulent bed mixtures.

3,710,511

PROCEDURES FOR USE OF GENIC MALE STERILITY IN PRODUCTION OF COMMERCIAL HYBRID MAIZE

Earl Byron Patterson, Urbana, Ill., assignor to University of Illinois Foundation, Urbana, Ill.

Filed April 21, 1971, Ser. No. 135,873
Int. Cl. A01g *1/00*
U.S. Cl. 47—58 **21 Claims**



Procedures for use of genic male sterility in the production of commercial hybrid maize, including producing and maintaining seed stocks substantially of a homozygous male sterile genotype and stocks substantially of a heterozygous, male sterile allele and male fertile allele, genotype, which include a differentially transmitted variation of chromosomal constitution.

3,710,512

PROCESS FOR PREPARING LICORICE EXTRACT-LIKE MATERIAL FOR TOBACCO FLAVORING

Einosuke Tamaki, Tokyp; Isao Morishita, Hiratsuka; Ko Nishida, Tokyo; Kunio Kato, Kawasaki, and Takashi Matsumoto, Tokyo, all of Japan, assignors to The Japan Monopoly Corporation, Tokyo, Japan

Filed Sept. 15, 1971, Ser. No. 180,867
Claims priority, application Japan, Nov. 16, 1970, 45/100154
Int. Cl. A01g *31/00*; A23l *1/26*
U.S. Cl. 47—58 **3 Claims**

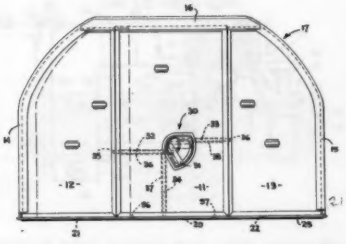
Process for preparing licorice extract-like material for tobacco flavoring includes the steps of: culturing a fragment of plant body of licorice plant in a liquid medium for plant tissue-culture under aerobic condition, to derive licorice cells suspended in the liquid, boiling the cultured broth containing the licorice cells, filtrating said broth after cooling, and concentrating said filtrate to 1/40 – 1/50 by volume to make it into concentrated extract.

3,710,513

DOOR STRUCTURE FOR CARGO CONTAINER

Robert D. Richter, Torrance, Calif., assignor to Tridair Industries, Redondo Beach, Calif.

Filed Nov. 24, 1971, Ser. No. 201,924
Int. Cl. E06b *3/32*
U.S. Cl. 49—464 **9 Claims**



A cargo container has a removable door structure comprising a plurality of sections which slidably fit within a track which runs along the edge of the floor of the container. A tongue of the bottom of the door sections rides in a groove in the

track between two lip portions thereof. One of the door sections has a door operating mechanism which in sequence first operates latch bar means to disengage this door section from adjacent door sections, and then operates a push bar which drives against the lip of the track to lift the tongue of the door section out of the track groove to enable easy removable of this door section.

3,710,514

APPARATUS FOR SUPERFINISHING OF ROTARY CRANKPINS OF CRANKSHAFTS

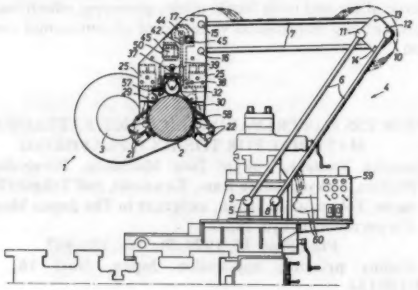
Heinert Runge, Borchshoher Str. 129, Bremen-Schonebeck, Germany

Filed Dec. 22, 1970, Ser. No. 100,584

Claims priority, application Germany, Dec. 6, 1969, P 19 61 279.4

Int. Cl. B24b *5/42*

U.S. Cl. 51—3 **8 Claims**



Apparatus includes both at least one superfinishing tool and a grinding device which are designed to simultaneously machine crankpins of crankshafts. The grinding device which is controlled by a leveling arrangement functions to assure that the crankpin is parallel with the axis of the center pin of the crankshaft.

3,710,515

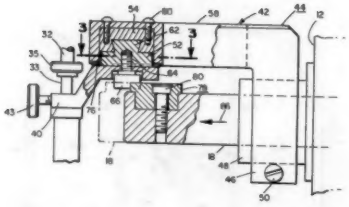
ABRADING APPARATUS

Walter Kulischenko, East Brunswick, and John W. Callahan, Lanoka Harbor, both of N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed June 7, 1971, Ser. No. 150,312

Int. Cl. B24c *3/02*

U.S. Cl. 51—8 **10 Claims**



In abrading apparatus, wherein a nozzle issues a jet of airborne abrasive material and a traversing mechanism moves in a given direction, a motion translating device cooperates with the traversing mechanism to move the nozzle transverse to the given direction.

3,710,516

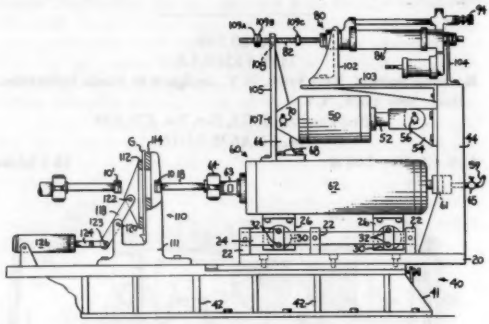
METHOD OF DRILLING GLASS

Joseph B. Kelly, Crestline, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 746,095, July 19, 1968, abandoned. This application Feb. 19, 1971, Ser. No. 116,970

Int. Cl. B24b *1/00*

U.S. Cl. 51—283 **6 Claims**



A method of drilling holes in glass wherein a drill is rotated at a speed between about 3,400 rpm and about 3,600 rpm and advanced into a glass work piece at a constant forward rate of speed.

3,710,517

PROCESS FOR FINISH POLISHING OF GLASS LENSES

Paul F. Valerio, and Robert M. Werner, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 788,655, Jan. 2, 1969. This application Feb. 22, 1971, Ser. No. 117,780

Int. Cl. B24b *1/00;* **B24d** *17/00*

U.S. Cl. 51—284 **11 Claims**

The use of tiny diamonds for finish polishing of glass lenses has been made possible by incorporating them into a lap material comprising very small diamonds in a special polymeric matrix of the reaction product of an organic epoxide with an appropriate "hardener," such as a polyamine.

3,710,518

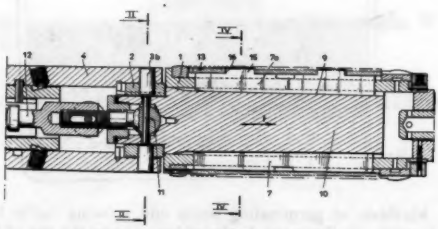
TOOLS FOR ROUGH FINISHING AND HONING BORES

Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed July 2, 1971, Ser. No. 159,117

Int. Cl. B24b *9/02*

U.S. Cl. 51—338 **5 Claims**



A lapping tool includes a split, distendable, sleeve having alternate relatively coarse abrasive portions and relatively fine abrasive portions, the sleeve surrounding a plurality of wedge-like members arranged in two sets and carried by a slotted tool

body. One set of wedge-like members lies inwardly of the coarser grained portions of sleeve and another set lies inwardly of the finer portions. The wedge angles of the first set are shallower than the second set so that as an expander acts progressively on the wedge-like members, the coarser portions of the sleeve are initially forced into contact with the bore of a workpiece and the finer portions are subsequently forced out beyond the coarser portions.

3,710,519

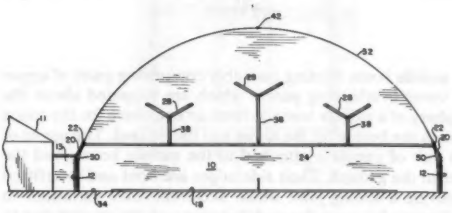
AIR SUPPORTED STRUCTURES FOR FENCED AREAS

Woodford F. Jones, 201 West 77th Street, New York, N.Y.

Filed July 21, 1971, Ser. No. 164,644

Int. Cl. E04b *1/345*

U.S. Cl. 52—2 **7 Claims**



Methods and apparatus are provided for enclosing existing outdoor areas defined by a fence, wall or the like by the utilization of an air supported covering, the base of which is supported by the existing fence or wall, in a manner eliminating the need for additional space outside the existing fenced or walled area, and in a manner providing a substantial increase in usable space within the defined area over previous such structures. In addition, an arrangement is provided for simultaneously utilizing the base support for the air supported structure for a lighting arrangement for the defined space.

3,710,520

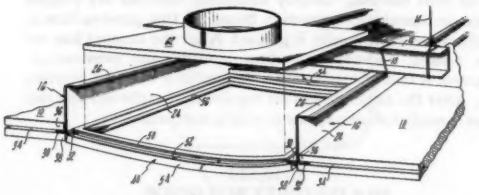
UTILITY FRAME FOR SUSPENDED CEILING CONSTRUCTION

Samuel R. Federowicz, 1032 North Worthy Street, Windsor, Conn.

Filed Feb. 17, 1971, Ser. No. 116,171

Int. Cl. E04b *5/55*; **E04c** *2/38*; **E21s** *3/08*

U.S. Cl. 52—27 **4 Claims**



A one-piece utility frame for access tiles and the like is provided for use in a suspended ceiling tile construction of the flush mounted type. The frame consists of a generally rectangular frame body portion substantially equal in size to a ceiling tile and having a flat exposed bottom surface, an integral lip projecting inwardly from the body portion and defining a central access opening bounded by the frame, said lip forming a continuation of said exposed bottom surface and forming a ledge for supporting an access tile in said opening, and a frame-mounting flange secured to said body portion in spaced overlying relationship therewith and forming an outwardly facing notch mountable on a Z-bar flange for supporting the frame and positioning the exposed bottom surface in flush-mounted relationship with adjacent tiles of the ceiling construction.

3,710,521

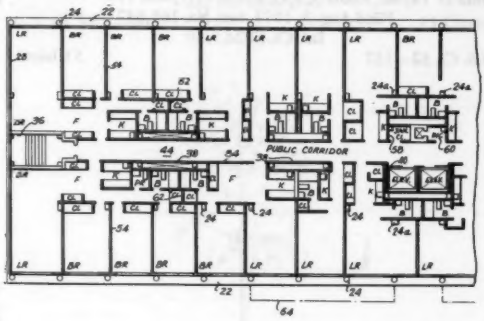
MULTISTORY BUILDINGS AND WALLS THEREOF

Alex Danin, 1080 Mamaroneck Avenue, White Plains, N.Y.

Filed Sept. 28, 1970, Ser. No. 76,067

Int. Cl. E04f *19/08*, *17/08*

U.S. Cl. 52—27 **14 Claims**



A multistory building forming quarters for residential or commercial purposes. The multistory structure includes a non-disposable frame and floor slab portion and a disposable panel and enclosure portion. The non-disposable portion is composed of a series of floor slabs situated at the various levels of the several stories of the structure and a plurality of supporting columns carrying the floor slabs, the structure having at ground level a given configuration which may be substantially repeated by the several floor slabs situated at the several stories above ground level. The disposable panel and enclosure portion forms the exterior wall structure of the building and defines the interior rooms thereof. Several hollow utility shafts extend upwardly through the several slabs and prefabricated kitchen and bathroom units are grouped adjacent to the utility shafts to be serviced thereby, these units being preferably of a prefabricated, plug-in type. The disposable enclosure and panel portion is made up of a plurality of panels each of which is formed with a peripheral groove so that panels situated in a common plane will have the grooves thereof communicating with each other and these grooves will also extend along the floors and ceilings of the spaces defined between a pair of successive floor slabs. These grooves are filled at the site with a plastic filler which sets to form a rigid wall structure from the several panels.

3,710,522

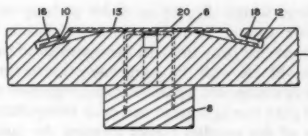
GUIDE GROOVE FOR STAPLE GUN

Thomas W. Fritz, East Petersburg; Charles F. Gilbo, Lancaster, and Norman A. Johnson, Lititz, all of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed June 16, 1971, Ser. No. 153,509

Int. Cl. E04b *1/00*

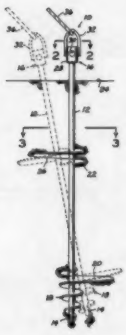
U.S. Cl. 52—105 **1 Claim**



An improved joint structure for a strip concealing means which covers fasteners that hold a ceiling board in position. Angled grooves are provided in a ceiling board for receiving a strip. Between the angled grooves staples are placed to fasten the board in position and the strip is placed in the grooves to conceal the staples. A third groove is provided in the area

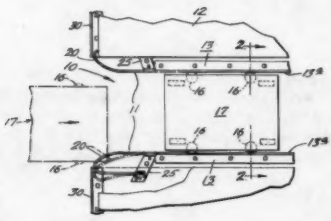
between the angled grooves and this groove functions as a guide for a stapling gun to ensure that the staples are properly positioned.

3,710,523
EARTH ANCHOR
John D. Taylor, Route 3, P.O. Box 5, Perryton, Tex.
Filed Aug. 3, 1971, Ser. No. 168,647
Int. Cl. E02d *5/80*
U.S. Cl. 52—157 **5 Claims**



An elongated shaft, having one sharpened end, is provided with a first single plate helix adjacent its sharpened end. A portion of the uppermost first helix convolution forms a laterally enlarged first blade portion. A second single plate helix is connected to the shaft, intermediate its ends, and forms a laterally enlarged second blade portion extending in a diametrically opposite direction with respect to the first blade portion. Head means on the other end of the shaft permits rotation of the shaft about its longitudinal axis and engages a guy line.

3,710,524
RESILIENT VEHICLE GUIDEWAY END ABUTMENTS
Edward A. Seiz, 136 East Third Street, Lansdale, Pa.
Filed May 6, 1971, Ser. No. 140,850
Int. Cl. B61f *9/00*; **E01f** *9/00*; **E04h** *6/42*
U.S. Cl. 52—174 **7 Claims**

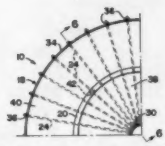


A guideway which directs an order pick-up vehicle in an aisle between storage structures in a warehouse is provided with a resilient entryway to assist the operator of the vehicle in aligning the vehicle with the guideway prior to travel therein. The entryway comprises a pair of spring members each having a U-shaped plan configuration and each being mounted at one end to one of the parallel tracks forming the guideway. The spring members diverge away from their connected ends to form a tapered entry to the guideway and the spring members have free ends which are constrained against displacement transversely outward of the tracks. If the vehicle is not properly aligned with the guideway during insertion, the spring members operate to absorb some of the kinetic energy of the vehicle to thereby yieldably arrest motion of the vehicle.

3,710,525
MOBILE HOME SKIRTING
Rosario Lopes, St. Clair Shores, Mich., assignor to Temo Incorporated, Fraser, Mich.
Continuation of Ser. No. 789,761, Jan. 8, 1969, abandoned.
This application Dec. 7, 1970, Ser. No. 95,875
Int. Cl. E02d *27/00*
U.S. Cl. 52—169 **1 Claim**

A mobile home skirting assembly comprising pairs of upper and lower overlapping panels which are mounted about the periphery of a mobile home to form an enclosure for the space between the bottom of the home and the ground. The upper of each pair of panels is attached to the mobile home, and the lower to the ground. Their side edges are bent and interfitted to provide a sliding joint which accommodates variations in the distance between the mobile home and the ground due to frost expansion, but prevents separation between adjacent pairs of panels under high wind conditions.

3,710,526
ANNULAR COMPRESSION BEAM
Charles A. Parks, 509 19th Avenue West, Palmetto, Fla.
Filed Dec. 17, 1970, Ser. No. 99,053
Int. Cl. E04c *3/26*
U.S. Cl. 52—223 R **8 Claims**

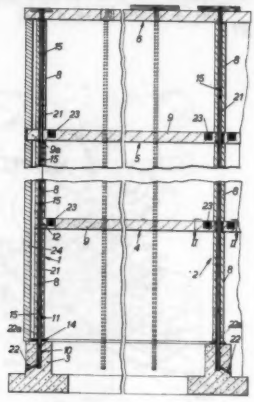


A roof, floor and ceiling construction is disclosed wherein pre or post stressed, radially extending tendons are placed within an annular compression beam. In this construction a reinforced annular girder is precast. After the cement has set high tensile, radially extending tendons are prestressed. Concrete is than placed in areas defined as a web and annulus slab. After the concrete has set the tension is relieved and the beam is ready for use as floor or roof construction.

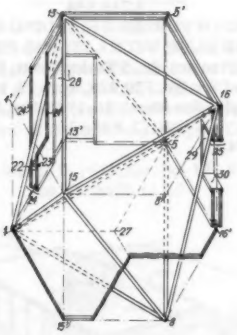
3,710,527
MULTI-STOREY BUILDINGS
James E. C. Farebrother, Tanglewood, Park Drive, Little Aston, Staffordshire, England
Filed Feb. 9, 1971, Ser. No. 113,855
Int. Cl. E04b *1/38*, *1/04*
U.S. Cl. 52—236 **11 Claims**

In a multi-storey building of which the walls and floors are erected from prefabricated panels, each wall panel extends from one to the other of two adjacent floors and the opposite ends of each floor panel are supported respectively, upon the upper edges of panels in two adjacent parallel walls, a plurality of continuous, vertical ducts, each extending the full height of the building, is formed in each of the walls and the floor panels supported thereby, a co-extensive reinforcing member in each duct is bonded to the surface of the duct by a solidified fill surrounding the member and forced, before solidification, into the lower end of the duct, and the floor panel ends supported

by each internal wall are castellated, the tongues of the castellations are shorter than the thickness or are located wholly between the faces of the respective wall panels and are narrower than the pockets in the castellated ends, and each of the tongues is engaged in and is located symmetrically to a corresponding one of the pockets in the adjacent castellated end of another of the floor panels and is bonded to the pocket by a solidified fill inserted, before solidification, into clearances between the sides and tip of the tongue and the sides and floor of the pocket.

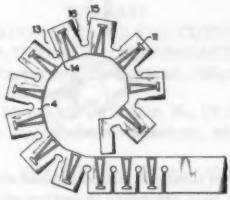


3,710,528
BUILDING STRUCTURES
Jacques H. Riedberger, 24 boulevard, Meudon, and Rene M. Ezavin, 43, rue Albert Perdreaux, Chaville, both of France
Filed Feb. 11, 1971, Ser. No. 114,529
Claims priority, application France, Feb. 13, 1970, 7005169
Int. Cl. E04h *1/00*
U.S. Cl. 52—236 **5 Claims**



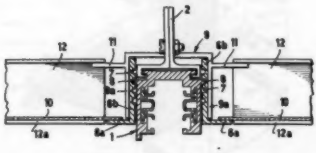
A truss structure with an open-work skeleton of beam construction comprising octahedral units and tetrahedral units some of which have their apices in a first horizontal plane and the remainder have their apices in a second plane, the edges of each tetrahedral unit being the common edges of adjoining octahedral units. Beams are disposed along the edges of these octahedral and tetrahedral units. Rectangular panel members lying in the vertical planes defined by the tetrahedral unit edges are attached to those beams. Hexagonal panel members are disposed in the first and second planes. The rectangular and hexagonal panel members define cells in the form of hexagonal prisms.

3,710,529
GRATE
Werner Pass, 583 Schwelm, Westfalen, Germany, assignor to Gummiwerk Pass & Sohn, Schwelm/Westfalen, Germany
Filed July 13, 1970, Ser. No. 54,249
Claims priority, application Germany, Feb. 26, 1970, P 20 08 926.3
Int. Cl. E04c *2/42*
U.S. Cl. 52—666 **11 Claims**



A row of elongated parallel bars is provided each having spaced opposite ends. At their opposite ends the bars are connected by two elongated spacing and connecting strips extending along the row and consisting of elastically yieldable material. Each of these strips is provided on one side with longitudinally spaced recesses each accommodating a portion of one of the bars in mating relationship, and at the other side intermediate consecutive ones of the recesses the strips are provided with slots extending towards the one side to facilitate rolling up of the grate in the direction towards the one side.

3,710,530
DEVICE FOR SUPPORTING A LOWERED FALSE CEILING CONSISTING OF PLATES AND PROVIDED WITH A CURRENT SUPPLY RAIL
Rainer Iikka Tapio Valtonen, Soukka, Finland, assignor to Oy Nokia Ab, Helsinki, Finland
Filed April 19, 1971, Ser. No. 135,170
Claims priority, application Finland, April 20, 1970, 1096/70
Int. Cl. E04f *17/08*
U.S. Cl. 52—731 **8 Claims**



A device for supporting the plates of a lowered ceiling comprising spaced current supply rails. The device comprises two separate L-shaped bars locked detachably on opposite sides of the supply rail and U-shaped locking brackets arranged in saddle like manner upon said support bars at spaced positions along said supply rail.

ERRATUM

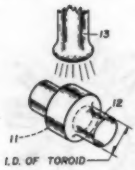
For Class 52—745 see:
Patent No. 3,710,534

3,710,531

METHOD OF ENCASING A TOROIDALLY SHAPED OBJECT WITH A HEAT SHRINKABLE COVERING

Joseph J. Bielawski, Skokie, Ill., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Sept. 2, 1971, Ser. No. 177,363
Int. Cl. B65b *53/06*
U.S. Cl. 53—13 13 Claims



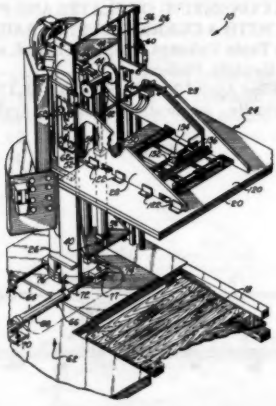
Heat shrinkable tubing is placed around an article such as a toroid, having a hole extending therethrough, so that the axis of the tubing is coaxial with the axis of the toroid. The tubing is heated until the ends of the tubing shrink to the dimension of the inside diameter of the toroid. The ends of the tubing, while still warm and soft, are then folded within the toroid, overlapped, and secured together to encase the toroid within the tubing.

3,710,532

APPARATUS AND METHOD FOR STACKING ARTICLES

Norman N. Smilek, and Joseph T. Lockley, both of New Castle, Pa., assignors to Lockley Manufacturing Co., Inc., New Castle, Pa.

Filed Aug. 2, 1971, Ser. No. 168,098
Int. Cl. B65b *35/38*, *35/50*
U.S. Cl. 53—26 15 Claims



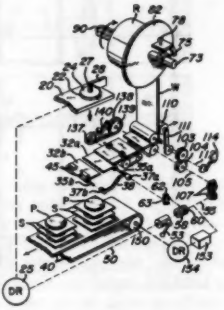
An apparatus and a method for stacking materials, such as articles and separator sheets, include a platen movable between a sheet pickup position and an article pickup position. Means is provided to move the platen between the sheet pickup position and the article pickup position. A separator sheet pickup means is mounted on the platen for picking up at least one separator sheet from a supply of separator sheets upon actuation thereof. The apparatus also includes an article pickup means on the platen for picking up at least one article from an array of articles upon actuation thereof. The platen is operable to support in a stacked array both the articles and separator sheets simultaneously. When simultaneously supporting the articles and separator sheets, the platen is moved to an unloading position where the articles and separator sheets are simultaneously released from the platen onto a pallet.

3,710,533

SEPARATOR SHEET FEEDER FOR FOOD MACHINERY

Richard H. Burns, Troy, Ohio, assignor to The Hobart Manufacturing Company, Troy, Ohio

Continuation-in-part of Ser. No. 570,904, Aug. 8, 1966, abandoned. This application July 1, 1969, Ser. No. 838,303
Int. Cl. B65b *35/10*, *41/16*
U.S. Cl. 53—157 19 Claims



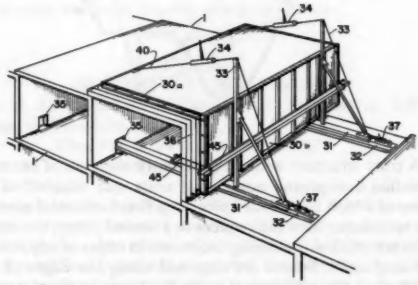
Apparatus for interposing separator sheets between portions of food products, such as meat patties, includes a trap door arrangement mounted beneath a position from which individual patties are dropped, and a supply device for feeding individual separator sheets onto the door while it is closed. The patty drops onto the sheet with the door in closed position, then the door is quickly opened to drop the sheet and patty together onto a conveyor. The supply of separators is in the form of a continuous roll, and a cutter and feeder arrangement severs sheets of proper size from the roll, and advances the individual sheets onto the closed trap door. The size of the severed sheets can be adjusted.

3,710,534

METHOD OF FORMING BUILDING UNITS AND ASSEMBLING SAME WITH LATERAL DISPLACEMENT

John Owen McNamara, Jr., 5 Taylor Street, Fort Screven, Ga.

Continuation of Ser. No. 720,925, April 12, 1968, abandoned. This application March 16, 1970, Ser. No. 20,084
Int. Cl. E04g *21/14*
U.S. Cl. 52—745 4 Claims

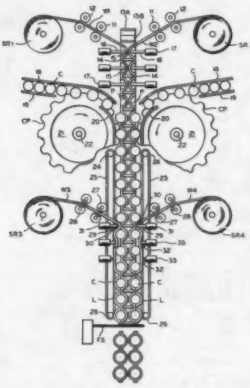


A method of manufacture and assembly of preformed building units is provided wherein a stack of right angle units is cast with the upper layers of the stack being moved as a group horizontally, leaving the bottom unit in place.

3,710,535
APPARATUS AND METHOD FOR FORMING ARTICLE CARRIERS

Richard T. Walter, Norristown, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed June 8, 1970, Ser. No. 44,336
Int. Cl. B65b *13/04, 17/04*
U.S. Cl. 53—3 11 Claims

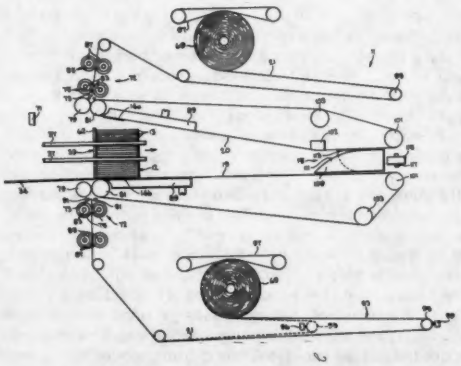


Method and apparatus for forming a carrier for an article group. The carrier is formed from webs extending around the individual articles of the group. Apparatus is provided for feeding a pair of inner webs between two rows of the group, and structure is provided for forming the webs so that each web half encircles the articles of each row. These webs are joined at the points of conjugacy of the articles. Apparatus is also provided for feeding a pair of webs along the outer sides of each row, and for joining such outer webs to the inner webs. Structure is provided for stretching the outer webs as they are adhered to the inner webs to rely on the memory characteristics of the thermoplastic resins forming the webs to insure that the article enclosing loops snugly fit the articles.

3,710,536
METHOD OF AND AN APPARATUS FOR AUTOMATICALLY COMPRESSING AND BANDING A STACK OF ARTICLES

Charles A. Lee, and Warren R. Furbeck, both of Knoxville, Tenn., assignors to International Paper Company, New York, N.Y.

Filed March 8, 1971, Ser. No. 121,948
Int. Cl. B65b *13/20*
U.S. Cl. 53—24 10 Claims

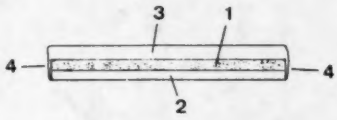


A stack of articles is fed forwardly along a path and a pair of banding or wrapper sheets are brought into engagement with stack. The stack is compressed between oppositely directed forces and ends of the two wrapping sheets are overlapped and joined to form an endless band about the articles. When the compressing forces are relieved, the articles are held in a compressed and stacked state by the band. Preferably, the stacks are compressed between a pair of endless, continuously moving belts; and individual wrapper sheets are severed from long supply webs prior to being joined into an endless band about a compressed stack.

3,710,537
METHOD FOR SEALING THE CUTTING OR SEPARATION SURFACES OF RADIOACTIVE FOILS

Gustav A. Purt, Rapperswil, Switzerland, assignor to Cerberus AG Mannedorf, Germany

Filed March 13, 1970, Ser. No. 19,241
Claims priority, application Switzerland, March 29, 1969, 4746/69
Int. Cl. G21h *5/00;* B23k *31/02*
U.S. Cl. 53—39 7 Claims

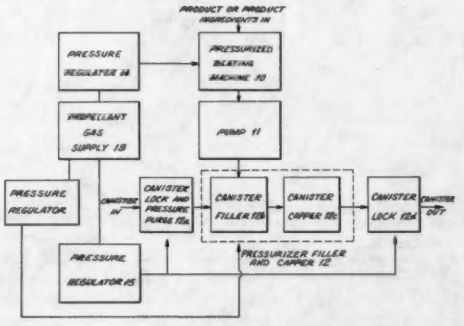


There is disclosed a method for sealing or closing the cutting surfaces of radioactive foils covered at both sides with protective- or support layers formed of a noble metal, which comprises the steps of heating the foil for at least ten minutes to at least 60 percent of the absolute temperature of the melting point of the lowest melting protective- or support metal layer.

3,710,538
METHOD FOR FILLING PRESSURIZED PACKAGES AND AEROSOL DISPENSERS

Lawrence Lowy, and William O. Wurtz, both of 36 West 40th Street, New York, N.Y.

Filed Jan. 31, 1969, Ser. No. 795,560
Int. Cl. B65b *31/02*
U.S. Cl. 53—22 R 1 Claim



A method and apparatus for filling pressurized packages and aerosol dispensers. The product which is to be dispensed is initially whipped or beaten in a suitable pressurized beating machine so that minute gas bubbles are incorporated into the product. The gas used for pressurizing the beating machine may be the same as the propellant gas which is used in the dispenser. With the product thus initially treated it is pumped, while maintained under pressure, into a suitable canister which is itself maintained in a pressurized atmosphere of the propellant gas, and the pump will, with minimum work ex-

erted on the product, displace a predetermined quantity thereof into the canister which is in the pressurized atmosphere. While this canister is still in the pressurized atmosphere it is capped so that it becomes closed with a conventional valve release, and then the thus-closed canister is removed from the pressurized atmosphere. Thereafter, the valve of the canister can be actuated to release the product therefrom, with the product expanding in volume as it discharges out of the canister.

3,710,539

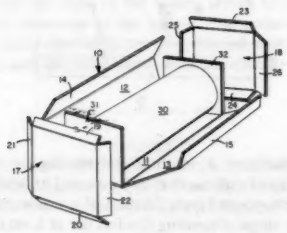
CONTAINER AND METHOD FOR PACKAGING MATERIAL SENSITIVE TO CONTAMINANTS

Samuel Bynum Cothran, and James Rodney Kirk, both of Florence, S.C., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 3, 1970, Ser. No. 60,423

Int. Cl. B65b *53/02*

U.S. Cl. 53—27 **6 Claims**



A packaging method is disclosed using a container having an integral body member forming top, bottom and side walls, two end walls having flaps on all sides, and a plastic film shrink-fit around the container.

3,710,540

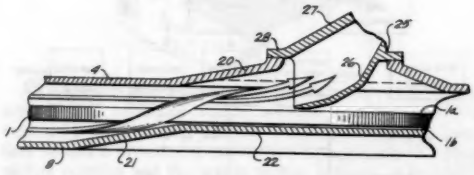
SELF-PURGING DISK SYSTEM HAVING AIR FLOW GUIDE MEANS

Alpheus F. Stansell, Thousand Oaks, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 25, 1970, Ser. No. 92,649

Int. Cl. B01d *46/00*

U.S. Cl. 55—473 **8 Claims**



A rotating magnetic disk is enclosed in a housing having at least one pair of ports. An external conduit having a filter therein interconnects the ports. The rotation of the disk imparts a velocity to the air adjacent to the disk faces and the interior of the housing provides an airflow guide which causes air from both sides of the disk to flow into a scoop disposed in one port and coupled to the conduit. Thus a high rate of air circulation through the conduit is achieved and the air is rapidly filtered.

3,710,541

SYNTHETIC RESIN SEAMLESS TETRAHEDRON

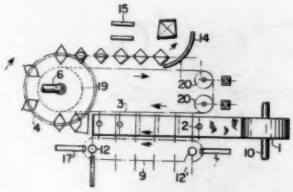
Shinjiro Izumi, 18-7, Ryouke 1-chome, Urawa-shi, Japan

Filed Dec. 22, 1970, Ser. No. 100,568

Claims priority, application Japan, Dec. 22, 1969, 44/103598; Dec. 29, 1969, 44/489

Int. Cl. B65b *9/10, 43/30*

U.S. Cl. 53—29 **4 Claims**



An improved container of tetrahedral shape comprising a seamless tube of thermoplastic material having the opposite ends thereof sealed in straight lines in crosswise directions relative to one another; and the method of cutting, forming, expanding, filling and sealing such tubular material with novel material handling techniques to provide filled containers of tetrahedral shape.

3,710,542

APPARATUS FOR FILLING A SAUSAGE SKIN WITH SLICED SAUSAGE FILLING

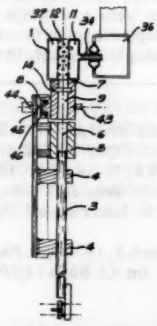
Pierre Chambost, route de Valsonne, and Aime Chambost, Box 32, Boulevard Voltaire, both of Tarare, France

Filed Sept. 22, 1970, Ser. No. 74,452

Claims priority, application France, Sept. 23, 1969, 6932286

Int. Cl. B65b *63/00*

U.S. Cl. 53—123 **12 Claims**

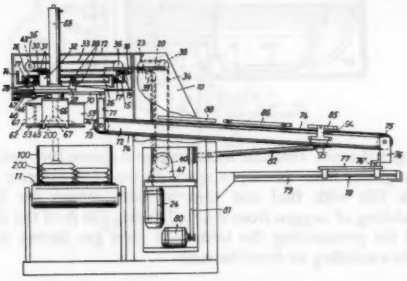


An apparatus for filling a sausage casing with a sliced sausage filling, includes a movable endless conveyor on which is fixed a plurality of spaced, support members. Each support member has a web interconnecting opposed side flanges. Guides extend between the side flanges for slidably supporting a guide block. The guide block has a through bore, axially aligned with a through bore of a member rigidly attached to the guide block. A slot is formed in the guide block and extends transversely of and communicates with the through bore in the guide block. First and second bars are slidably attached to the web. The first bar, in a first position of the guide block, places a sausage casing in the bore of the member. The second bar, in a second position of the guide block, intermittently feeds sausage filling through the bore of the guide block passed the slot into the sausage casing. The disclosure also relates to a method of making a sausage filled with a sliced filling. A cutter, has a cutting edge portion which extends into the slot to slice the sausage filling before entry of the sausage filling into the sausage casing.

3,710,543
ARRANGEMENT FOR DEPOSITING OBJECTS IN A RECEPTACLE

Franco Toss, 6301 Alten-Buseck, Germany, assignor to Hamac-Hansella GmbH, Viersen, Germany

Filed Dec. 30, 1970, Ser. No. 102,613
Claims priority, application Germany, Jan. 16, 1970, P 20 01 760.1
Int. Cl. B65b 5/10, 39/12
U.S. Cl. 53—244 8 Claims

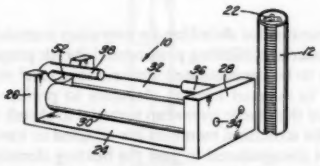


An arrangement for depositing objects in a receptacle comprises a first conveyor which advances upwardly open cartons to a loading station and a second conveyor which conveys objects to be loaded seriatim to the loading station. A carriage is mounted for movement in one direction upwardly above and in at least substantial parallelism with the upper opening of the carton at the loading station, and another carriage is mounted on the first carriage for movement with reference thereto and to the opening of the carton in a direction normal to the first-mentioned direction. A distributing head is provided on the second carriage and receives objects from the second conveyor for depositing them in the receptacle through the opening in accordance with the positioning of the second carriage relative to the receptacle.

3,710,544
DEVICE FOR MEASURING COINS AND WRAPPING THEM IN ROLLS

Ernest V. Lamming, R.R. #1, Vernon, British Columbia, Canada

Filed June 11, 1971, Ser. No. 152,270
Int. Cl. B65b 11/04; G07d 9/06
U.S. Cl. 53—213 7 Claims



An open-end tube is filled to the top with coins, forming a stack of predetermined number, and is placed between two parallel rollers on the device, with a wrapping paper interposed between tube and rollers. The roll is centered between the ends of the device by a stationary pin at one end engaging the top coin, and a spring-loaded pin at the other end engaging the bottom coin through a hole in the tube bottom. The spring-loaded pin extends over the end of the device and bends downwardly in a 180° turn, extending back under the rollers where it is connected to spring means. The tube is removed endwise from the coins, and has a slot in its bottom and side wall to pass the downwardly bent portion of the spring-loaded pin. The stack is then revolved on the rollers while the paper is wrapped around the coins. The wrapped stack is then removed and the ends of the wrapper flattened down over the ends of the coin roll.

3,710,545
PROCESS FOR THE SEPARATION OF IMPURITIES FROM CRUDE GAS

Klaus Gunther; Erich Schneck; Hartmut Voigt, all of Frankfurt, and Karlheinrich Wesselborg, Lorsbach, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed March 12, 1971, Ser. No. 123,829
Claims priority, application Germany, March 14, 1970, P 20 12 154.4
Int. Cl. B01d 53/14
U.S. Cl. 55—29 3 Claims

Readily polymerizing impurities are separated from crude gas obtained by pyrolysis by washing the crude gas with water and then pre-cooling the crude gas which is still hot with atomized cold calcium chloride solution before drying it with circulated cold calcium chloride solution. Part of the calcium chloride solution is continuously removed from the cycle of calcium chloride solution.

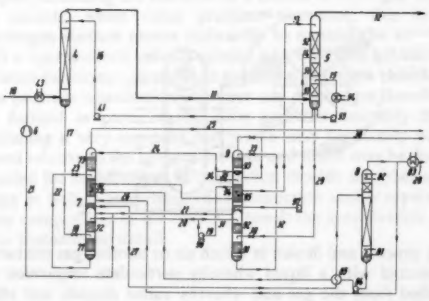
ERRATUM

For Class 53—184 see:
Patent No. 3,710,550

3,710,546
PROCESS FOR THE REMOVAL OF HYDROGEN SULFIDE AND CARBON DIOXIDE FROM FUEL GASES AND SYNTHESIS GASES

Gerhard W. Grunewald, Mainz-Mombach, and Gerhard Hochgesand, Neu-Isenburg, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 889,687, Dec. 31, 1969, abandoned, which is a division of Ser. No. 674,558, Oct. 11, 1967, Pat. No. 3,531,917. This application Sept. 16, 1971, Ser. No. 181,272
Int. Cl. B01d 19/00, 53/14
U.S. Cl. 55—42 6 Claims

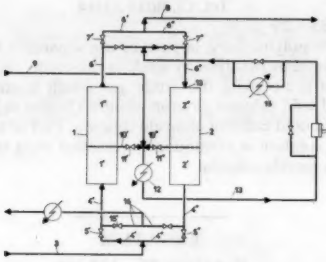


In the process of removing CO_2 and H2S from fuel or synthesis gas by absorption with an organic solvent where the gas to be purified passes through an H_2S absorber and then through two stages of a CO_2 absorber with the organic solvent being fed partially to the first and partially to the second stage of the CO_2 absorber and thence, in a CO_2 laden condition, to the H_2S absorber; partially resolving the H_2S and CO_2 rich absorbent from the H_2S absorber to produce a substantially sulfurfree gas and an H_2S rich liquid, regenerating the H_2S rich liquid in a regenerator to produce an H_2S rich gas suitable for the production of sulfur and a fully regenerated absorbent which is fed to the second stage of the CO_2 absorber, partially regenerating a portion of the CO_2 rich absorbent from the first stage of the CO_2 absorber by flashing, and feeding the partially regenerated absorbent to the first stage of the CO_2 absorber.

3,710,547
ADSORPTION PROCESS FOR NATURAL GAS PURIFICATION

Warren Leonard Nelson, Montreal, Quebec, Canada, assignor to AL E. & C. Ltd., Montreal, Quebec, Canada

Filed March 11, 1971, Ser. No. 123,301
Claims priority, application Great Britain, March 11, 1970, 11,779/70
Int. Cl. B01d *53/04*
U.S. Cl. 55—58 **4 Claims**

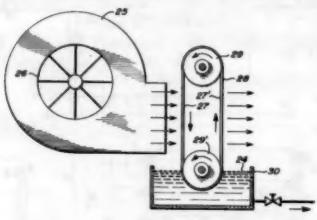


A cyclic process of purification of gases containing at least two undesirable products by adsorption on a bed divided in at least two sections in which the regeneration is realized in a first stage by introducing on the adsorption bed countercurrently to the adsorption direction, after depressurizing, wherein the said gaseous mixture is obtained by combining with a given volume of reactivation gas a stream of gas coming out from between the two sections of the bed, a flow of said mixture equivalent to said volume of reactivation gas being passed through the first adsorption section.

3,710,548
PROCESS AND DEVICE FOR PURIFYING AIR

Robert W. Coughlin, 902 Seventh Avenue, Bethlehem, Pa.

Filed Oct. 19, 1970, Ser. No. 81,877
Int. Cl. B01d *53/06*
U.S. Cl. 55—73 **10 Claims**



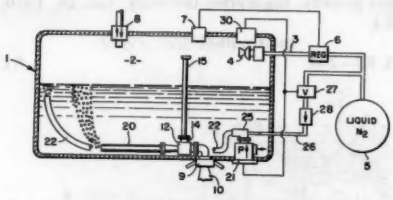
A process and device in which air or another gas mixture is contacted with a liquid whereby particulate impurities are washed from the gas and whereby sulfur dioxide and other gaseous pollutants, together with oxygen, are absorbed from the gas into the liquid whereupon said sulfur dioxide and other gaseous pollutants are oxidized to other more soluble chemical forms with the assistance of a catalyst present within the system.

3,710,549
FUEL TANK INERTING SYSTEM

Richard A. Nichols, Santa Ana, and Jack M. Ulanovsky, Newport Beach, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jan. 29, 1971, Ser. No. 110,862
Int. Cl. B01d *19/00*
U.S. Cl. 55—160 **11 Claims**

A system for maintaining the oxygen content in the fuel vapor space of an aircraft fuel tank at less than 10 percent by volume, such system including an aspirating type mixing nozzle that draws an inert gaseous mixture from the tank vapor space and mixes it with liquid fuel being supplied to the tank whereby said inert gaseous mixture scrubs dissolved oxygen from the fuel and returns to the vapor space with the scrubbed

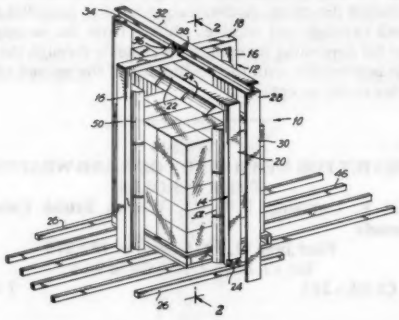


oxygen therein. The tank includes a vent means for venting excess gasses from the vapor space to the tank exterior as the tank fills with fuel and also includes means for further scrubbing of oxygen from the fuel during climb of the aircraft and for pressurizing the tank with inert gas during descent while excluding air from the tank.

3,710,550
APPARATUS FOR SHRINKING PLASTIC FILM OVER PALLETIZED LOADS

Keith J. Osborne, 2167 B North Central Road, Fort Lee, N.J.

Filed Dec. 3, 1970, Ser. No. 94,646
Int. Cl. B65b *53/02*
U.S. Cl. 53—184 **5 Claims**



An apparatus for shrinking an overwrap material, such as a plastic material exhibiting preferential shrink properties, over an article to be encapsulated wherein structural members are provided to support heating elements to preferentially heat portions of the plastic overwrap material to shrink it about the article. The structural members are adapted to traverse the article to be encapsulated to pass the heating elements over the overwrap to cause the overwrap material to shrink about the article thereby to encapsulate the article tightly within the overwrap material.

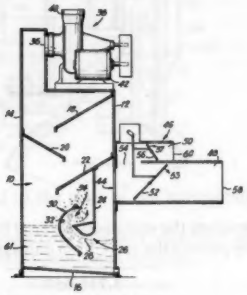
3,710,551
GAS SCRUBBER

John R. Sved, New York, N.Y., assignor to Pollution Rectifiers Corp., New York, N.Y.

Filed June 18, 1970, Ser. No. 47,237
Int. Cl. B01d *47/02*
U.S. Cl. 55—226 **9 Claims**

A scrubber for removing pollutants from a gaseous medium, having a chamber with a plurality of spaced straight and curved baffles positioned to direct incoming dirty air over a water reservoir at velocities sufficiently high to enable the dirty air to entrain multitudes of water droplets. The water droplets are thoroughly mixed with the dirty air, and the solid

pollutants in the air are thoroughly wetted. The wet solid pollutants, being relatively heavy, are deflected downward through the action of the baffles and reduced air velocities into the water reservoir. A constant-volume air control means interposed between the chamber and the source of polluted air, such as dirty air from an incinerator or the like, contains a



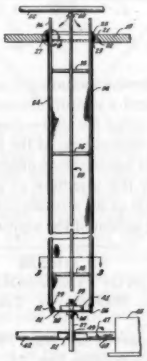
primary air inlet duct and a secondary air inlet duct where the air through each duct is controlled by a damper. The dampers of the two ducts are coupled to operate complementary to each other to provide a constant air flow to the chamber for various flows of polluted air directed to the scrubber through the primary air inlet duct.

3,710,552

AIR FILTER AND DUST COLLECTOR

Richard G. Genton, 733 South Magnolia Avenue, West Covina, Calif.

Filed Aug. 27, 1970, Ser. No. 67,525
Int. Cl. B01d *46/04*
U.S. Cl. 55—291 **2 Claims**



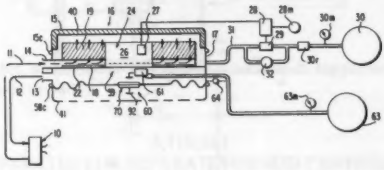
A dry air filter and dust collector employing fabric cylinders through which air is drawn from the outside to the inside. The fabric cylinders are tensioned at the bottom and mounted to permit shrinking and stretching of the fabric while maintaining constant tension. At the same time means are provided for applying shaking movements to the bottom of the filter cylinders to remove dust accumulation therefrom. A source of low pressure air for the top of the fabric cylinder may oppose flow of the air to be filtered so that the dust will not be held against the fabric surface thereby.

3,710,553

CARBON DIOXIDE SCRUBBER AND BREATHING DIAPHRAGM ASSEMBLY FOR DIVING APPARATUS

Frederick A. Parker, Broomall, Pa., and Charles J. Soult, Willingboro, N.J., assignors to Biomarine Industries, Inc.

Filed Jan. 28, 1970, Ser. No. 6,387
Int. Cl. B01d *50/00*
U.S. Cl. 55—316 **14 Claims**



A compact carbon dioxide scrubber and breathing diaphragm assembly for a closed circuit breathing system in which exhaled air is channeled by a baffle system over a moisture absorbant material and through a replaceable annular cartridge containing a carbon dioxide removal chemical in such a way that the chemical cartridge is blanketed by the exhaled or expelled air and is insulated from surrounding cold water. Uniform flow through the chemical cartridge is assured by providing high unit area water repellent filters at the top and bottom of the cartridge. Because of the large total area exposed to the flow of expelled air, there is a minimum pressure drop which is virtually unnoticeable to the diver and because of the water repellancy, water or moisture in the exhaled air does not collect upon and form blockages to decrease the effective area exposed to the flow of expelled air. Breathing circuit gases pass into a pressure equalization chamber formed by a diaphragm assembly which accepts that volume of gas in the same fashion as breathing bags which are occasionally used with semi-closed equipment. As the diver descends, water pressure exerts a force on the diaphragm which moves it in a direction to reduce the volume of gas until a valve is tripped permitting the entrance of a diluent or inert gas. During ascents, when water pressure decreases, this same diaphragm surface moves outwardly to expand the volume until a bypass-check valve is opened which permits exhaust of pressure balancing quantities of gas contained in the chamber. This pressure equalization chamber and diaphragm therefore are formed as parts of the same scrubber assembly thus producing a very compact unit which may be closely positioned relative to the lungs of the user and which may be disassembled for replacement of the carbon dioxide scrubber cartridge as well as permitting visual inspection and/or repair of other components of the device. Consult the specification for other features and details.

3,710,554

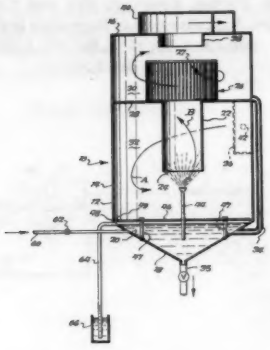
WET COLLECTOR

Roger S. Brookman, East Aurora, N.Y., assignor to Dustex Corp., Buffalo, N.Y.

Filed March 15, 1971, Ser. No. 123,969
Int. Cl. B01d *47/06*
U.S. Cl. 55—236 **11 Claims**

A wet collector comprising a housing having a primary separator for removing relatively heavy particulate material from a contaminated gas stream by means of centrifugal force and a secondary separator including a hollow cylindrical scrubbing element having a circular wall formed of a plurality

of restricted passages for removing the remaining particulate material from the gas. Liquid is discharged into the secondary



separator and is distributed over the wall of the scrubbing element by the moving gas stream.

3,710,555

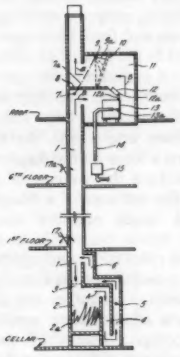
INCINERATOR EMISSIONS REDUCTION SYSTEM

Irving Domnitch, 80-15 41st Avenue, Elmhurst, N.Y.

Filed Aug. 21, 1970, Ser. No. 65,906

Int. Cl. B01d *47/06*

U.S. Cl. 55—225 **1 Claim**



A system for upgrading the quality of pollution control within incinerators in which particulate emission is significantly reduced through automatic wet scrubbing of the smoke to remove particulate and other harmful material before emission of the smoke into the air. The system operates automatically in the presence of smoke and is self-cleaning.

3,710,556

PROTECTED PRESSURE RELEASE VALVE

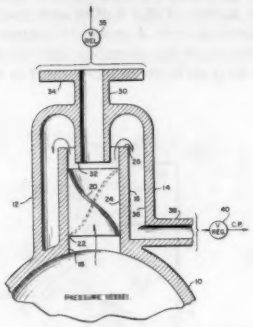
Robert O. Barratt, Parsippany, N.J., and John M. Connell, Mountain Lakes, N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.

Filed Nov. 20, 1970, Ser. No. 91,421

Int. Cl. B01d *45/12*

U.S. Cl. 55—210 **2 Claims**

Means to release excessive pressure in a pressure vessel containing gas in which denser material is entrained. A separator is placed between a pressure release valve and the pressure



vessel to separate the entrained material from the escaping gas and thereby protect the valve from damage.

3,710,557

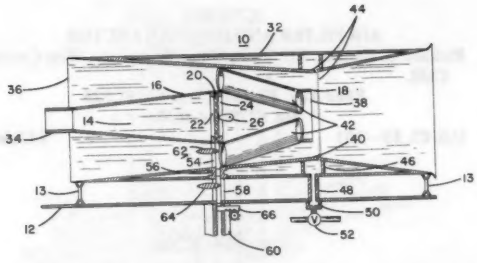
AIR SAMPLING DEVICE

James C. Couchman, Fort Worth, Tex., and George W. Applebay, Albuquerque, N. Mex., assignors to the United States of America as represented by the United States Atomic Energy Commission

Continuation of Ser. No. 33,752, May 1, 1970, abandoned. This application March 17, 1972, Ser. No. 235,785

Int. Cl. B01d *35/26*

U.S. Cl. 55—270 **10 Claims**



An air sampling device including a sampling duct containing a particulate filter and a venturi shroud surrounding the duct. Flow tubes are provided for delivering high velocity air from the venturi into the region behind the filter. Control jets in the region of the venturi constriction enable the effect of the venturi to be varied by the injection of pressurized air from an auxiliary source such as an aircraft cabin or the utilization of the siphon pumping action of the venturi.

3,710,558

SEPARATOR OF FLUID-SOLID MIXTURES

Friedhelm R. Feder, Whitehaven, Tenn., assignor to Wedco, Inc., Garwood, N.J.

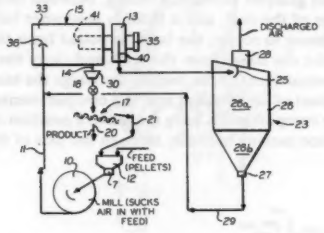
Continuation-in-part of Ser. No. 778,995, Nov. 26, 1968, abandoned. This application Feb. 25, 1970, Ser. No. 14,091

Int. Cl. B04c *5/04*

U.S. Cl. 55—338 **2 Claims**

System for separation of fluid-solid mixture from, for example, a mill. The mixture is introduced into a fluid-solid separator having a horizontally disposed cylindrical body portion, a tangential inlet adjacent one end of the body portion, and an outlet for separated solids adjacent the other end of the body portion. Suction means are mounted on the outlet end of the body portion and the inlet of the suction means serves to discharge the separated fluid from the horizontally disposed separator. A sifter for the separated solids can be disposed below the separator.

The separated fluid, containing some entrained solids, can be introduced into a vertically disposed cyclone separator. The solids separated in the vertically disposed cyclone separator can be recycled to the inlet of the horizontally disposed separator.

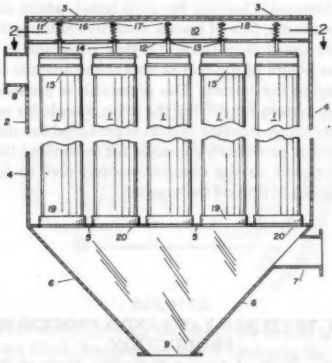


The use of a horizontally disposed separator according to the inventor reduces the headroom required.

3,710,559
BAG HANGER

Dale K. Harris, and Louis R. Soulier, both of Monroe, La., assignors to Cities Service Company, New York, N.Y.

Filed June 25, 1971, Ser. No. 156,755
Int. Cl. B01d *46/02*
U.S. Cl. 55—341 **3 Claims**



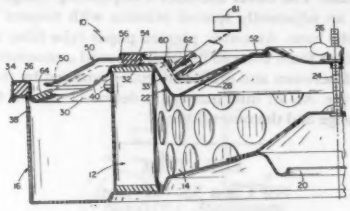
A bag filter having a plurality of bags contained in a bag house. One end of the bags is secured to openings in the bag house floor and the other ends are suspended from an elongated hanger plate located in the upper part of the bag house. The plate is provided with slots at spaced intervals along its length, and each slot extends from the edge of the plate toward the center line thereof. Suspension rods attached to the top of the bags extend upwardly, pass through the slots in the hanger plate, and are selectively movable laterally into and out of the slots. Springs rest on the plate, urge the rods upwardly, and thus maintain tension on the bags. For initial installation or replacement of the bags, suspension rods can be inserted in or removed from the slots in the plate, with the springs in place, by firm lateral pressure on the rods.

3,710,560
AIR CLEANER

Gerald E. Maddocks, Chatham, Ontario, Canada, assignor to Fram Corporation, East Providence, R.I.

Filed Sept. 25, 1970, Ser. No. 75,357
Int. Cl. B01d *27/08*
U.S. Cl. 55—419 **3 Claims**

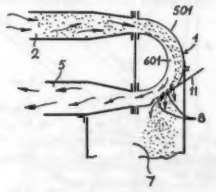
Air cleaner with supplementary air inlet in housing cover, and second cover adjacent the first and movable between first position in which air is allowed to pass through the supplementary inlet, and second position in which such supplementary air flow is impeded.



3,710,561
APPARATUS FOR SEPARATING SOLID PARTICLES SUSPENDED IN A GASEOUS STREAM

Franco Garrone, Bologna, Italy, assignor to AMF Incorporated

Filed Dec. 4, 1970, Ser. No. 95,214
Claims priority, application Italy, Dec. 24, 1969, 7536 A/69
Int. Cl. B01d *45/12*
U.S. Cl. 55—429 **1 Claim**

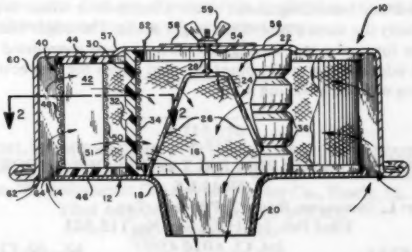


In this apparatus, a stream of gas having particles of dust is subjected to a change of direction such as, for example, a 90° turn. As the stream of gas is turned, the particles of dust which are suspended in the gas, and being heavier than the gas, tend to collect and form a lamina of dust particles along the inner surface of the wall forming the outside curve of the turn through the action of centrifugal force. The lamina of dust particles is deflected out through an opening in the wall forming the outside curve of the turn, and the clean air which is positioned adjacent the inside curve of the turn is directed passed the opening.

3,710,562
DUAL ELEMENT AIR FILTER

Malcolm S. McKenzie, Van Nuys, Calif., assignor to Sandmaster Company, Van Nuys, Calif.

Filed March 27, 1972, Ser. No. 238,424
Int. Cl. B01d *46/00*
U.S. Cl. 55—487 **6 Claims**



A dual element, self cleaning air filter for cleaning excessively dirty air. A base contains a central air outlet nozzle and

retains a bracket which supports a cover in spaced relation from the base. The cover includes a depending flange which extends in an adjacently spaced relation with respect to the margin of the base. An outer, pleated paper-type filter and an inner, resilient foam filter in mutually spaced concentric relation extend between and are positionally retained by the base and the cover. An air inlet passage is defined between the depending flange and the outer filter.

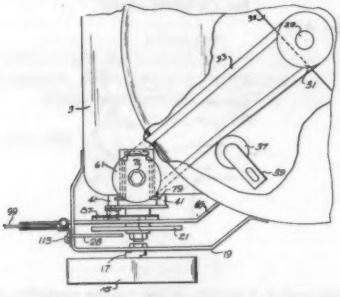
ERRATUM

For Class 55—473 see:
Patent No. 3,710,540

3,710,563
ROTARY EDGER FOR USE WITH POWER DRIVEN LAWN MOWER

Melvin Polette, 2223 Wilding Drive, and George P. Newell, 8101 Ellerton, both of Overland, Mo.

Filed Nov. 9, 1970, Ser. No. 87,984
Int. Cl. A01d *35/26*
U.S. Cl. 56—16.9 **22 Claims**



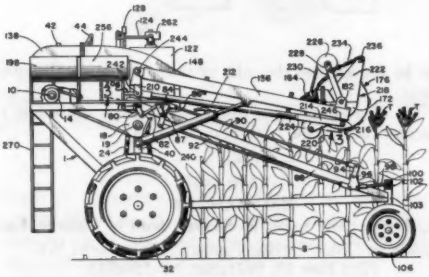
A rotary lawn mower having a motor, a housing, four ground-engaging wheels, a horizontal blade for lawn mowing and a vertical blade for edging. The edger blade is part of an edger assembly mounted on the housing inside a front wheel of the mower. The edger assembly includes a subassembly which is slidably mounted on the housing for vertical movement into and out of an operative position. The edger assembly also includes a vertically fixed subassembly including a drive pulley, a clutch member rotatably mounted on the housing and a camming means for moving the vertically movable part of the edger assembly downward into its operative position and upward out of its operative position. The movable subassembly includes a vertically extending drive shaft extending through the pulley and the first clutch member. A spring-loaded second clutch member is slidably mounted on the shaft above the first clutch member for engaging the first clutch member when the movable assembly is moved downward. The vertically movable subassembly also includes a gear box connecting the vertically extending drive shaft to a horizontally extending drive shaft, the edger blade, blade guards, and a guide blade extending ahead of the front mower wheel in substantially the same plane as the edger blade. The edger blade is in the form of a star having alternate skewed sharpened forward edges and straight blunt forward edges for respectively cutting sod and breaking it out.

3,710,564
APPARATUS FOR PULLING TASSELS OUT OF CORN STALKS

Albert L. Sammann, Route 3, Plinview, Tex.

Filed Feb. 16, 1971, Ser. No. 115,543
Int. Cl. A01d *45/02*
U.S. Cl. 56—51 **16 Claims**

A self-propelled machine for movement along corn rows to pull the corn tassel therefrom to prevent pollinization, wherein a reel moves along a corn row or rows, which reel is compartmented, the periphery of which rotates at approximately the same linear speed of the machine as it travels over the ground, so corn tassels will be moved into a compartment to the reel and grasped between a facing, between two of the compartments of the reel, and a flexible elastomer belt so as the reel continues to rotate, the tassel is pulled from the stalk so as to disjoint the tassel from the stalk and carry the tassel, within the compartment of the reel, to discharge the tassel forwardly by a blast of air directed into the compartments of the reel when the compartments have moved to a position above a horizontal plane passing medially through the axis of the reel.



Provision is made to discharge the air from the compartments of the reel downwardly so that the leaves of the corn stalk will be blown downward leaving the corn tassel, which moves into the compartments, free of leaves, thereby enabling the pulling of the corn tassel therefrom. Further provision is made to regulate the height of the reel as well as the attitude of the reel with respect to the terrain. The apparatus is provided with a power drive system for driving the drive wheels for movement over the terrain. A steering system is provided for steering the device. Further provisions are made for tensioning the flexible belt with respect to the compartmented reel to insure the proper gripping action on the tassels.

3,710,565
ELASTIC TEXTURED YARN AND A PROCESS FOR ITS PRODUCTION

Robert Schnegg; Karl-August Heinroth; Herbert Neumann; Rudi Dauscher; Helmut Ohse, and Klaus Nickel, all of Dormagen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 10, 1970, Ser. No. 71,251
Claims priority, application Germany, Sept. 16, 1969, P 19 46 791.5
Int. Cl. D02g *1/02*
U.S. Cl. 57—140 R **6 Claims**

An elastic, low-bulk, textured yarn with a curl count of from 300 to 700 turns per meter, having alternating portions with S-twist and Z-twist, of irregular length.

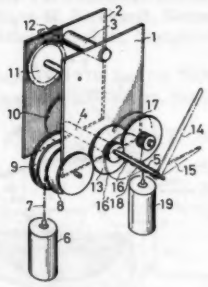
3,710,566
CLOCKWORK MOVEMENT SUPPORT

Isao Masuyama, 5075 Oaza Ishioka, Ishioka, Japan

Filed Oct. 15, 1971, Ser. No. 189,511
Claims priority, application Japan, Oct. 31, 1970, 45/95373
Int. Cl. G04b *29/00*
U.S. Cl. 58—52 R **4 Claims**

Miniaturized support for clockworks which have chain-operated movements, wherein the front and rear plates of the

clock can be made of small size and are joined to each other



by means of only a pair of struts, one of which is so constructed to surround the axle of the long hand of the clock.

3,710,567

CALENDAR WATCH WITH ISOLATED HOUR HAND CHANGING MEANS COMBINED WITH SYNCHRONIZATION GEARING

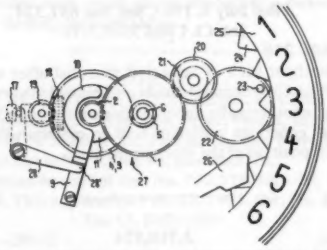
Willy Cleusix, Bienne, Switzerland, assignor to OMEGA Louis Brandt & Frere S.A., Bern, Switzerland

Filed Jan. 26, 1972, Ser. No. 220,966

Claims priority, application Switzerland, Feb. 9, 1971, 1870/71

Int. Cl. G04b *19/24, 27/00*

U.S. Cl. 58—58 **2 Claims**



A calendar watch showing the day of the month is combined with an hour hand changing device for changing the hour hand independently of the minute hand and includes a watch movement driving the hour hand, the minute hand and a day of the month indicator, the hour hand changing device being associated with the movement and including means for selectively by-passing a driving gear of the movement and driving the hour hand through an hour wheel which in turn drives a series of gears for operating the day of the month indicator so that the hour hand and the day of the month indicator remain synchronized to enable the indicator to change the day at midnight.

3,710,568

INTEGRAL TUBING AND/OR ELECTRICAL LEAD SUPPORT AND MOUNTING PAD FOR GAS TURBINE ENGINE CONTROLS AND ACCESSORIES

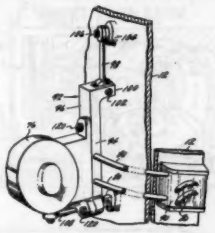
Joe R. Rice, Cincinnati, Ohio, assignor to General Electric Company

Filed Aug. 12, 1971, Ser. No. 171,065

Int. Cl. F02c *7/20*

U.S. Cl. 60—39.31 R **14 Claims**

A new tubing (or electrical lead) support is combined with a new gas turbine engine control and accessory mounting pad, which also serves to communicate fluids/electrical signals to such controls and accessories to provide a more compact and easily maintained gas turbine engine. Tubing is permanently or semi-permanently bonded to the engine casing and the tubing is terminated in a shear face pad which provides "plug in" mounting pads for the controls and accessories.



3,710,569

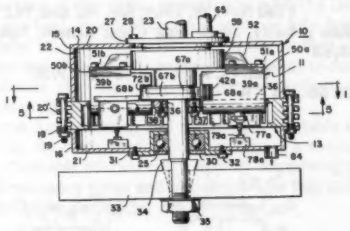
THREE-PHASE ENGINE APPARATUS

Clark I. Rinker, 1345 Oakes Boulevard, San Leandro, Calif.

Filed Nov. 12, 1970, Ser. No. 88,914

Int. Cl. F02c *5/00;* **F02g** *3/02*

U.S. Cl. 60—39.61 **10 Claims**



Engine apparatus operative to convert the chemical energy of a combustible fuel into mechanical energy, and useful both in propelling automotive vehicles and in other environments in which conventional internal combustion engines have utility. The engine apparatus is divided into three operational phases or modules which are generally independent of each other, thereby permitting improvement in overall engine performance both as respects efficiency or power delivery and as respects more complete combustion of fuel and less noxious exhaust emissions. The operational phases include a compression phase in which atmospheric air is compressed; a storage phase in which the compressed fluids are held captive for subsequent use; and a utilization phase in which the compressed fluids (air and fuel at this point) are ignited to produce combustion gases that are then used in application to a turbine wheel or torque ring to produce output torque.

3,710,570

OIL FILM BEARING FOR CONVERTER ELEMENT

Sidney J. Audiffred, and Howard C. Steury, both of Washington, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

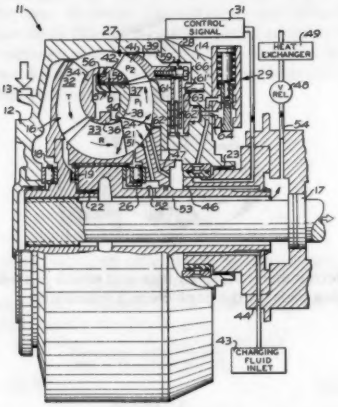
Filed Aug. 30, 1971, Ser. No. 175,950

Int. Cl. F16h *33/00*

U.S. Cl. 60—54 **12 Claims**

One of two relatively rotatable elements of a torque converter is supported by an oil film bearing therebetween. In par-

ticular, the secondary pump element of a dual pump torque converter is controllably slipped on the primary pump element



as supported by an oil film bearing and special axial retention means including a friction clutch.

3,710,571

FLUID ACTUATORS

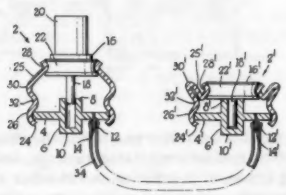
Peter M. Tracey, Crofts Place, Little Saxham, Bury St. Edmunds, England

Filed Nov. 28, 1969, Ser. No. 880,742

Claims priority, application Great Britain, Nov. 29, 1968, 56,858/68

Int. Cl. F12b *7/00*; **F01b** *19/00*

U.S. Cl. 60—54.5 R **25 Claims**



A fluid actuator is described in which the displaceable member, e.g., a diaphragm or bellows, is bi-stable so that in a system, e.g., an air pressure system, utilizing a pair of such actuators, the slave actuator can be maintained in either position without requiring a force to maintain on the master actuator. The bi-stable effect can be achieved by the resilience of the bellows or diaphragm itself or by a separate spring.

3,710,572

THRUST CHAMBER

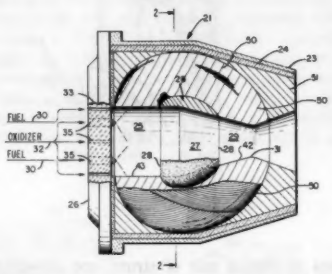
Frank R. Herud, Williamsville, N.Y., assignor to Textron Inc., Providence, R.I.

Filed Jan. 4, 1971, Ser. No. 103,758

Int. Cl. F02k *11/00*

U.S. Cl. 60—204 **12 Claims**

A rocket engine thrust chamber comprising a combustion chamber having its fuel inlet-mixing section and thrust nozzle section formed of integrally interconnecting pyrolyzed graphite filaments so oriented and extended that the fibers thereof individually interconnect the thrust nozzle throat and fuel inlet-mixing sections of the engine, and provide more effective heat conduction from the nozzle throat section to the fuel inlet-mixing section. Accordingly, the temperature of the nozzle throat section is significantly lowered, and the fuel reactants are preheated in improved manner. The disclosure



also relates to methods of fabricating and operating such engines.

3,710,573

HYDRAZINE MONOPROPELLANT PROCESS USING A GAS GENERATING BED

Theodore N. Hubbuch, Florence; James A. Murfree, Jr.; William A. Duncan, both of Huntsville; Billy J. Sandlin, Athens, and Henry A. Nappier, Lacey's Spring, all of Ala., assignors to The United States of America as represented by the Secretary of the Army

Filed July 5, 1967, Ser. No. 651,324

Int. Cl. C06d *5/08, 5/10*

U.S. Cl. 60—218 **4 Claims**

An adsorbent such as activated charcoal after adsorbing a fluid such as dinitrogen tetroxide and placed into contact with a reactive, exothermally decomposing monopropellant such as hydrazine, generates sufficient heat to maintain the exothermal decomposition of the monopropellant.

3,710,574

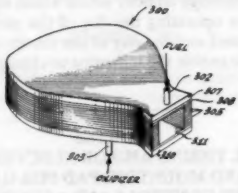
FLUID DISTRIBUTION AND INJECTION SYSTEMS

Ronald K. Pearson, 10350 Vacco St., Hacienda Heights, Calif.

Division of Ser. No. 578,275, Sept. 9, 1966, abandoned. This application July 22, 1969, Ser. No. 870,957

Int. Cl. F02k *9/02*

U.S. Cl. 60—258 **6 Claims**



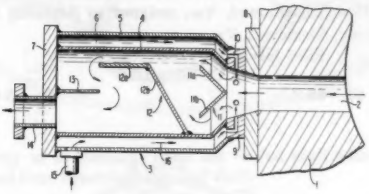
Apparatus for fluid distribution and injection within a propulsive device, wherein a plurality of preformed laminations are stacked and bonded together to form an integral structural shell having an interior surface defining a combustion chamber and a nozzle throat, the interior surface having discharge pores communicating with corresponding fluid discharge channels within the shell.

3,710,575

ROTARY PISTON INTERNAL COMBUSTION ENGINE ESPECIALLY OF TROCHOIDAL CONSTRUCTION

Heinz Lamm, Esslingen-St. Bernhardt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Sept. 10, 1970, Ser. No. 70,990
Claims priority, application Germany, Sept. 12, 1969, P 19 46 218.1
Int. Cl. F01n 3/10; F02b 75/10
U.S. Cl. 60—298 25 Claims



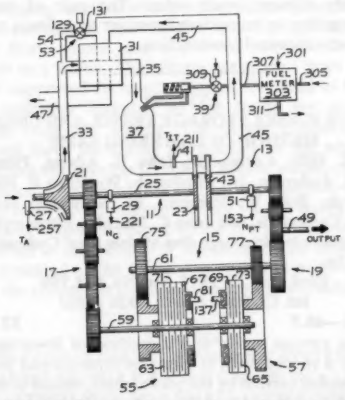
A rotary piston internal combustion engine, especially of trochoidal construction, which includes an outlet channel starting from an expansion space of the engine and an exhaust pipe for the exhaust gases which is of double-walled construction either over its entire length or over a part of its length; the annular space in the double-walled exhaust pipe is provided with a feed for either air or a fuel-air mixture at its end opposite the outlet channel and is in communication by way of one or several lines with the outlet channel or with the expansion space in proximity to the outlet channel or with the interior space of the exhaust pipe; the interior space of the exhaust pipe is provided with guide plates producing a turbulence of the mixture flowing through same.

3,710,576

DUAL CLUTCH FREE TURBINE ENGINE

Duane E. Evans, 2125 Wellington Drive, Peoria, Ill.; David A. Tyler, 2225 N. Bigelow St., Peoria, Ill., and Myron R. Gibson, Rural Route No. 1, Box 73, Edelstein, Ill.

Continuation-in-part of Ser. No. 777,278, Nov. 20, 1968, abandoned. This application Feb. 22, 1971, Ser. No. 117,546
Int. Cl. F02c 9/00
U.S. Cl. 60—39.03 16 Claims



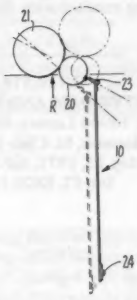
A dual clutch free turbine engine and the control means therefore wherein power transfer operates closed-loop on gasifier turbine temperature and dynamic braking operates closed-loop on power turbine speed and both operations are accomplished through a dual clutch power transfer system. A compressor blow-off through the heat exchanger takes place in a modulated manner during dynamic braking.

3,710,577

APPARATUS FOR CONFINING A FLOATABLE LIQUID

Neil Matheson, 14 Spindrift Passage, Corte Madera, Calif.

Filed Nov. 16, 1970, Ser. No. 89,818
Int. Cl. E02b 15/04
U.S. Cl. 61—1 F 6 Claims



In apparatus for collecting and/or retaining a floatable liquid such as oil on the surface of a body of water, an improved barrier section comprising a pair of inflatable tubes, one tube being connected intermediate a depending curtain wall and the other tube, said one tube having a smaller cross section than said other tube but sufficient buoyancy for supporting both the curtain and other tube at positions below and above the surface of the water, respectively; whereby the one tube serves as a keel, pivotal rotation of said one tube bringing said other tube into floating relation with the surface of the body of water and changing the center of buoyancy to develop corrective forces that maintain the barrier section in an upright stable position.

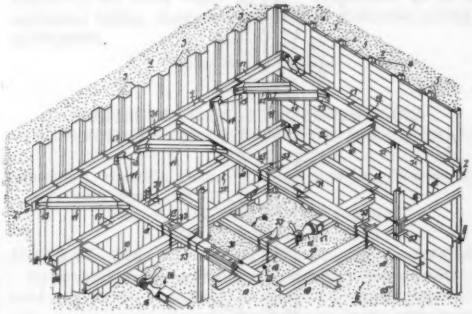
In apparatus for collecting and retaining a floatable liquid such as oil on the surface of a body of water, a towing assembly for a floatable barrier, said assembly comprising a pair of outboard buoyancy tanks and a towing bridle that stabilize the floatable barrier and inhibit yaw, pitch and roll.

3,710,578

METHOD FOR CONSTRUCTING FRAME FOR RETAINING EARTH

Tamotsu Inoue, Osaka, Japan, assignor to Hirose Steel Industrial Co., Ltd., Osaka, Japan

Filed March 4, 1971, Ser. No. 121,075
Int. Cl. E21d 7/00
U.S. Cl. 61—41 R 3 Claims



Between each pair of wales horizontally supported on sheet-pile walls in facing relationship, struts spaced apart in parallel

are provided to form an earth retaining frame. Each strut comprises a plurality of standard strut elements connected together, a junction of which is forced apart by a hydraulic jack which is interposed between the strut elements eccentrically of the axis of the strut. In the space thus expanded between the strut elements, an auxiliary strut element and a screw jack are provided. The strut is formed of the standard elements, auxiliary element and screw jack arranged in combination in pressing contact with the wales against the earth pressure.

3,710,579

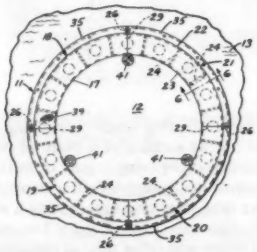
PORTABLE COFFER DAM AND METHOD OF MAKING

Donald H. Killmer, 16940 Lenore, Detroit, Mich., and Paul P. Zvonek, 25318 Harmon, St. Clair Shores, Mich.

Filed May 13, 1971, Ser. No. 142,971

Int. Cl. E02b *1/00*

U.S. Cl. 61—46 **7 Claims**



A portable coffer dam consisting of a plurality of rings, each ring consisting of a plurality of sections, each section comprising a pair of side plates spaced by trusses, end plates, attaching means, plastic foam filling between the plates, ballast and a compressed air flotation element in the plastic foam, with exhaust and recompressing means on the flotation element, together with sealing means between the sections and rings.

The method consists of fabricating the ring sections, foaming them on land, floating them to the site and then assembling the sections into rings on the site, lowering the rings into stacked position by adjusting the flotation elements to form the coffer dam.

3,710,580

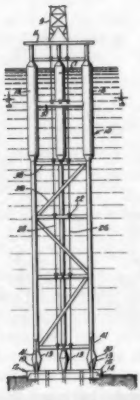
MARINE PLATFORM FOUNDATION STRUCTURE

George E. Mott, Metairie, La., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 24, 1969, Ser. No. 887,853

Int. Cl. B63b *21/50*; E02b *17/00*

U.S. Cl. 61—46.5 **3 Claims**



The invention relates to a marine platform foundation structure adapted to support an operating deck at an offshore site. The structure extends upwardly from the floor of a body of water to the surface, having the lower end operably connected to anchor means disposed at the ocean floor. Said anchor comprises one or more upstanding posts upon which the foundation structure is slidably registered. The connection therebetween permits the foundation structure to oscillate through a limited degree about the anchor in response to displacing forces, while maintaining said lower end horizontally stationary.

3,710,581

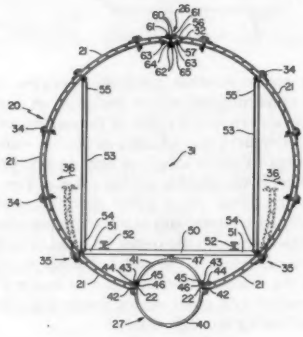
TUBULAR CONSTRUCTION

Lip F. Wong, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed July 6, 1971, Ser. No. 159,656

Int. Cl. E01g *5/06*

U.S. Cl. 61—45 R **5 Claims**



An improved tunnel construction is provided and comprises a plurality of members each having a pair of spaced sides and a pair of spaced parallel ends. Hook means is provided on each of the sides and the members are arranged in a plurality of longitudinal rows with the hook means of each member being interlocked with hook means of associated members and with each pair of members in one row being arranged with associated ends in adjoining relation while being overlapped by a single member of an adjoining row to define the major portion of the tunnel construction having a pair of rows arranged immediately adjacent each other. The pair of rows are fastened together in an enclosed manner to define a substantially cylindrical tunnel construction.

3,710,582

UNIQUE SUBSEA STORAGE VESSEL AND UNIQUE METHOD OF LOWERING SAME

Richard E. Hills, Coraopolis; John H. Adams, Pittsburgh; Lloyd E. Anderson, Jr., Pittsburgh; Woodrow E. Bliss, Jr., Pittsburgh; Fred W. Hamren, Jr., Sewickley; Harry F. Honath, Coraopolis, and John C. Murphy, Pittsburgh, all of Pa., assignors to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.

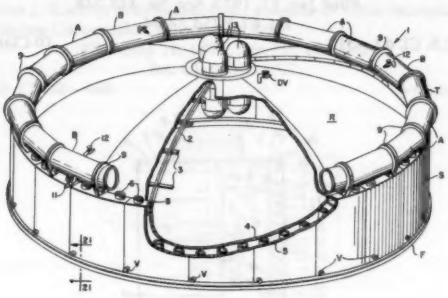
Filed May 17, 1971, Ser. No. 143,798

Int. Cl. B65d *89/10*; E02b *17/00*

U.S. Cl. 61—46.5 **52 Claims**

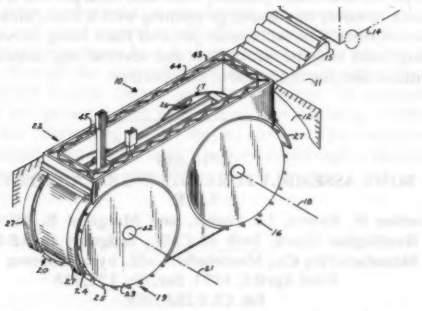
A subsea storage vessel and a method of lowering same comprising, a roofed shell, at least one separate and independent tank means carried by the roofed shell, means connected with at least one of said tank means to control the amount of liquid or other ballast therein to submerge the roofed shell, said at least one tank means singly or in combination being incapable of statically floating the roofed shell with all gas removed from beneath said roofed shell, auxiliary buoyancy means carried by said roofed shell imparting buoyancy thereto, said auxiliary buoyancy means alone being incapable of statically floating the roofed shell with all gas removed from

beneath the roofed shell, said at least one tank means and said auxiliary buoyancy means together being of such size and



buoyancy as to statically float the roofed shell with all gas removed from beneath the roofed shell.

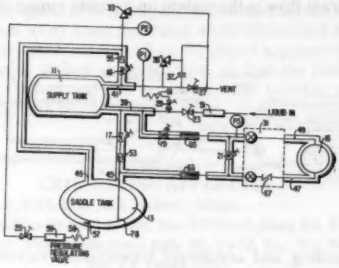
3,710,583
SELF-PROPELLED TILING MACHINE
James C. Blackwell, Indianapolis, Ind., assignor to Bymco Corporation, Indianapolis, Ind.
Filed July 6, 1971, Ser. No. 159,850
Int. Cl. E02f *5/02*; E21d *5/00*
U.S. Cl. 61—72.1 **9 Claims**



A tile laying machine which is adapted to roll on the bottom of a pre-cut trench. The machine is self-propelled and has a pair of front wheels and a pair of rear wheels rotatably mounted to a frame. The wheels are spaced from the frame and are supported by bearing means mounted to the frame. Power cylinders mounted to the frame are operable to rotatably drive the wheels. The power cylinders apply a downward force increasing the traction of the wheels when the machine sticks in the trench. A double walled enclosure in cooperation with the wheels protect the operator within the machine from cave-in dangers during the tile laying sequence. The digging means positioned on the frame is operable to dig a tile channel in the bottom of the trench. The tile dispensing means mounted to the frame is operable to position tile sections in the channel in an interconnecting relationship.

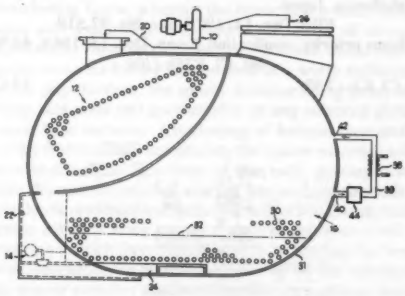
3,710,584
LOW-LOSS CLOSED-LOOP SUPPLY SYSTEM FOR TRANSFERRING LIQUIFIED GAS FROM A LARGE CONTAINER TO A SMALL CONTAINER
Kenneth R. Leonard, Boulder, Colo., assignor to Cryogenic Engineering Company, Denver, Colo.
Filed Oct. 23, 1970, Ser. No. 83,460
Int. Cl. F17c *13/00*
U.S. Cl. 62—54 **30 Claims**

A liquified gas is transferred from a supply tank to a saddle tank by gravity flow. After a predetermined amount of the liquified gas has been transferred, gravity flow is stopped and pressure is equalized between the saddle tank and the container to be filled. Thereafter, vapor from the container flows



into the supply tank causing liquified gas to flow from the saddle tank into the container. After the container has received a predetermined amount of liquified gas, liquid flow ends and pressure is equalized between the supply and saddle tanks.

3,710,585
METHOD AND APPARATUS FOR REMOVING MOISTURE FROM A REFRIGERATION SYSTEM
Warren H. Dillenbeck, York, Pa.; Paul W. Muench, Medford Lakes, N.J., and Elmo R. Walker, York, Pa., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed April 7, 1971, Ser. No. 132,033
Int. Cl. F25b *47/00*
U.S. Cl. 62—85 **5 Claims**

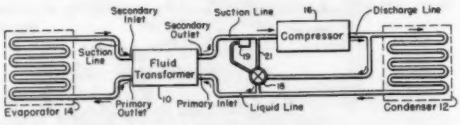


An improved method and apparatus for purging moisture from a refrigeration system includes means for withdrawing a mixture of refrigerant vapor and moisture from the system, removing moisture from this mixed stream and then reintroducing the dried vapor into said evaporator, all of said operation taking place during a normal shutdown period of said system.

3,710,586
REFRIGERATION SYSTEM WITH FLUID TRANSFORMER FOR CONTROLLING REGRIGERANT FLOW
Wendell E. Maudlin, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Feb. 16, 1971, Ser. No. 115,506
Int. Cl. F25b *41/04*
U.S. Cl. 62—216 **9 Claims**

By connecting the primary and secondary flow circuits of a fluid transformer in different portions of a vapor compression refrigeration cycle, the refrigerant flowing in the primary may be used to control the refrigerant in the secondary and vice versa. In the disclosed embodiment, condensed liquid refrigerant expands in and drives the primary which in turn transfers energy to the secondary circuit as compression work

to effect pumping of gaseous refrigerant through that circuit. A constant volumetric flow ratio is maintained between the flow rates in the two circuits, permitting the transformer to serve as a metering device to automatically meter the refrigerant flow in the system under wide ranges of evaporator



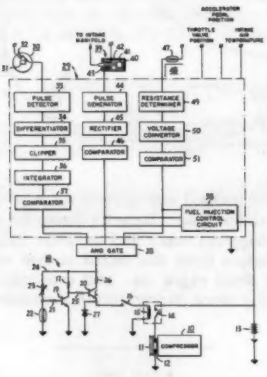
heat loading and condenser temperature variation. During very low ambient condenser temperatures, giving rise to correspondingly low condenser head pressures, the primary and secondary flow circuits interchange roles with the gaseous refrigerant in the secondary now effecting pumping of the liquid refrigerant through the primary to the evaporator.

3,710,587

CONTROL SYSTEM FOR A VEHICLE AIR-CONDITIONER

Yoshimasa Hayashi, Kudencho-Danchi 4-201, No. 740, Yokohama, Japan

Filed Dec. 14, 1970, Ser. No. 97,518
Claims priority, application Japan, Dec. 13, 1969, 44/99854
Int. Cl. F25b *1/00*
U.S. Cl. 62—230 **13 Claims**



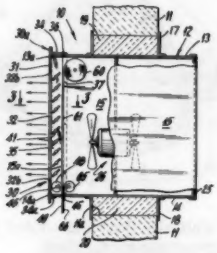
A control system for controlling the application of a driving input to the compressor of a vehicle air-conditioner only when the vehicle engine is producing sufficient extra power. The control system is provided with detection devices that detect at least two varying physical variables, such as engine speed and intake manifold vacuum or pressure, that are related to the power output of the engine. The physical variables thus represent operating conditions of the engine and a control signal is developed in dependence upon these operating conditions for controlling application of engine power output to the air-conditioner compressor only when engine operating conditions obtain that are indicative of available excess power of the engine for driving the compressor.

3,710,588

AIR CONDITIONER WITH DISPOSABLE AIR FILTER

Miguel Martinez, 840 Zumbador St., Rio Piedras, P.R.

Filed Jan. 12, 1972, Ser. No. 217,348
Int. Cl. F25d *17/04*
U.S. Cl. 62—317 **10 Claims**



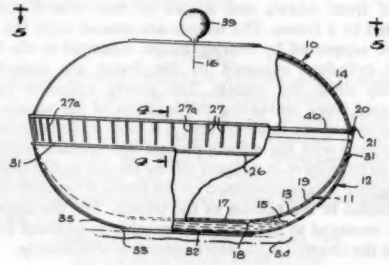
A roll of disposable filter sheeting is located at the upper end of the air discharge side of the air conditioner chassis. Two rolls of adhesive sheets are located at the lower end of the discharge side. The filter is drawn down to cover the discharge opening and out through a slot at the bottom of the chassis. The adhesive sheets from the two rolls come into contact with opposite sides of the filter as it comes out of the chassis and cover the used filter portion, when said used portion is drawn down to cover the discharge opening with a fresh, clean portion of filter. The withdrawn piece of filter being covered on both sides may be withdrawn and severed and disposed of without dirtying the hands of the operator.

3,710,589

BOWL ASSEMBLY FOR CHILLING SALADS OR THE LIKE

Gordon R. Brown, La Puente, and Margaret E. Michalek, Huntington Beach, both of Calif., assignors to All-Power Manufacturing Co., Montebello, Calif., by said Brown

Filed April 5, 1971, Ser. No. 131,088
Int. Cl. F25d *3/08*
U.S. Cl. 62—457 **16 Claims**

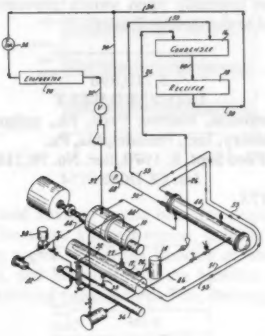


A bowl assembly including a first bowl in which a salad or the like is to be placed, and a second bowl within which the first bowl is at least partially received, in a manner leaving a space between the bowls for holding water which is to be frozen to maintain the salad in chilled condition, and with interfitting detents being provided on the two bowls for releasably retaining them in assembled relation. The lower bowl may also function when desired as a cover for the main bowl, or alternatively a separate cover may be provided.

3,710,590
REFRIGERANT COOLED OIL SYSTEM FOR A ROTARY SCREW COMPRESSOR

Erich J. Kocher, Milwaukee, Wis., assignor to Vilter Manufacturing Corporation, Milwaukee, Wis.

Filed July 19, 1971, Ser. No. 163,890
Int. Cl. F25b *43/02*
U.S. Cl. 62—468 6 Claims

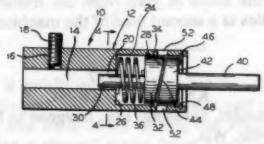


A refrigeration system including a positive displacement rotary screw compressor, a condenser, an evaporator, an oil cooler and an oil separator including a sump connected in the compressor discharge line. A pump for circulating oil from the sump through the oil cooler to the compressor and a liquid refrigerant bypass circuit including a pump for supplying liquid refrigerant under pressure in heat exchange relation with the lubricating oil in the oil cooler. The refrigerant discharged from the oil cooler is directed through a desuperheating coil in the oil separator.

3,710,591
CLUTCH FOR USE IN THE PLUMBING FIELD

William C. Gore, Elgin, and Eugene B. Shapiro, Highland Park, both of Ill., assignors to Beatrice Foods Company, Skokie, Ill.

Filed Feb. 8, 1971, Ser. No. 113,142
Int. Cl. F16d *7/02*
U.S. Cl. 64—30 R 3 Claims

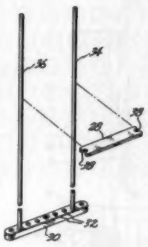


A power driven clutch comprising a carrier housing, the forward end of which is adapted to be connected to an object to be rotated, such as an auger, a screwdriver bit, a socket wrench, or the like, said carrier housing having a bore adapted to receive an axially movable member which is connected to said carrier housing, said axially movable member having a facing surface, and a driver member supported within the bore of said carrier housing and having a facing surface to make contact with the facing surface of said axially movable member for rotating same, said driver adapted to be connected to a source of rotative power. The axially movable member is adapted to move axially within said carrier housing in a direction away from the driver when the carrier housing rotation is arrested, such as when the object supported by the carrier housing strikes an obstruction, so that the facing surfaces of said driver and said axially movable member are permitted to slip with respect to each other.

3,710,592
CROCHETING APPARATUS

Inez L. Scow, P.O. Box 312, Helena, Mont.

Continuation-in-part of Ser. No. 729,803, May 16, 1968, abandoned. This application July 30, 1970, Ser. No. 59,621
Int. Cl. D04b *3/00*
U.S. Cl. 66—1 A 2 Claims

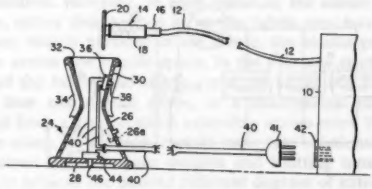


A crocheting frame wherein the frame has a base member provided with a plurality of spaced holes, a pair of elongated rods removably threaded into two of the holes, and a removable spacer member having slotted ends of a width sufficient to resiliently grip the rods, the spacer member being freely slidable along said rods and positionable at any selected distance from said base member. Crocheting of hairpin lace and the like on the frame comprises placing the spacer member a short distance in from the free ends of the rods, making a stitch between the spacer member and the free ends of the rods and with the hook manipulated from one side of the frame, turning the frame with the hook engaged and passed over a rod free end, making a stitch from the other side, repeating the foregoing steps, repositioning the spacer member on the rods by sliding the spacer member and work together away from the free ends of the rod and by removing the spacer member and replacing it closer to the free ends of the rods.

3,710,593
APPARATUS FOR MENDING KNITTED FABRICS

Michael A. Marley, New Brunswick, N.J., assignor to Marley Mend-More, Inc., New York, N.Y.

Filed Dec. 21, 1970, Ser. No. 100,058
Int. Cl. D04b *3/00*
U.S. Cl. 66—1 R 2 Claims



Apparatus for mending snagged loops of knitted fabrics, including a mending tool operated by reversible motor and a

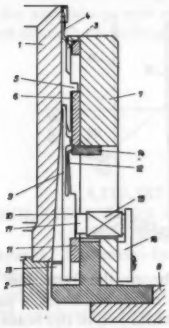
work-supporting mending cup in which the switch controlling the motor is mounted on the mending cup and operable by the operator's cup-holding hand. In a preferred embodiment, a separate main current control switch is mounted on the mending cup and is automatically operable by the tilting of the mending cup into working position.

3,710,594

DEVICE FOR THE SELECTION OF THE NEEDLES OR KNITTING ACCESSORIES OF CIRCULAR KNITTING MACHINES

Norbert Bourgeois, 10 Aube, France, assignor to Etudes et Bonneterie S.A.

Filed June 29, 1970, Ser. No. 50,396
Claims priority, application France, Aug. 5, 1969, 6926944
Int. Cl. D04b *15/78*
U.S. Cl. 66—50 R **1 Claim**



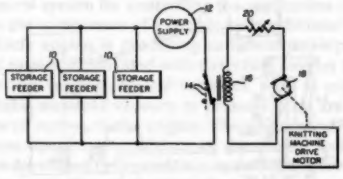
The needle jacks of a circular knitting machine each have an integral elastically deformable tongue. The jacks are delivered, in an operative position with the tongues deformed, to a electro-magnet which selectively holds the jacks in operative position against elastic urging of the tongues, whilst the non-selected jacks are moved to an inoperative position by elastic urging of the tongues. Downstream of the magnet, the tongues of the selected jacks return to the undeformed state without moving the selected jacks from the operative position in which the actuating butts thereof cooperate with a raising cam to move associated needles to a working position.

3,710,595

CONTROL MEANS FOR TEXTILE PRODUCING MACHINES

Edward M. Tellerman, East Rockaway, N.Y., assignor to Stop-Motion Devices Corporation, Plainview, N.Y.

Filed Aug. 5, 1971, Ser. No. 169,205
Int. Cl. D04b *35/10*
U.S. Cl. 66—157 **7 Claims**



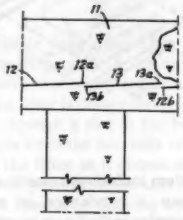
The disclosure relates to means for controlling the operation of components associated with a knitting machine, in response to the rotation or absence of rotation of the knitting machine. The components particularly, though illustratively, described are storage feeders associated with knitting machines whose operation is controlled so that their storage drums are prevented from being rotated when the knitting machine is not in operation. Generator means or other electrical means responsive to the condition of the knitting machine energizes a solenoid which closes a normally open switch separating the storage feeder from its power supply. When the knitting machine is out of operation, the solenoid is de-energized and the normally open switch prevents power from being supplied to the storage feeder.

3,710,596

INTURNED WELT

Roy D. Faigenbaum, Melrose Park, Pa., assignor to Faigenbaum Machinery, Inc., Philadelphia, Pa.

Filed Sept. 8, 1970, Ser. No. 70,218
Int. Cl. D04b *9/54*
U.S. Cl. 66—173 **4 Claims**



A circularly knit two ply closed tubular inturned welt, having starting and terminal courses of which the latter are the courses of circularly knit multiple course spiral fabric and of which the former has a course of transfer loops therein and having a split transfer course to close the welt, the split transfer course comprising a pair of segmental transfer courses — one of which is formed of half of the transfer loops of the course thereof interlooped with, and secured to, stitches of a corresponding half of one of a pair of equally spaced courses of the multiple course fabric, and the other of which is formed of the remaining half of the transfer loops of the course thereof interlooped with, and secured to, stitches of a corresponding half of the other of the spaced pair of the courses of the multiple course fabric.

The method of forming the above described inturned welt on a multiple feed circular knitting machine wherein the course of transfer loops is made at one of the feeds of the machine and wherein the split transfer course is made at a pair of equally spaced feeds of the machine, the first named feed being one of the spaced pair of feeds.

A multiple feed circular knitting machine having a circle of needles and a circle of transfer jacks associated therewith, the machine having means to form a course of knitting at one of its feeds on the circle of needles during which loops of yarn are placed upon the transfer hooks, and having means to transfer half the loops of yarn from the transfer jacks to the circle of needles at a second feed of the machine.

3,710,597

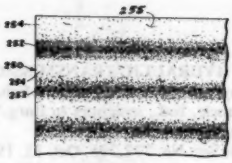
KNIT PILE FABRIC

Arnold W. Schmidt, Sarasota, Fla., assignor to Norwood Mills, Inc., Janesville, Wis.

Division of Ser. No. 835,155, June 20, 1969, Pat. No. 3,563,050, which is a division of Ser. No. 600,490, Dec. 9, 1966, Pat. No. 3,501,812, which is a division of Ser. No. 332,227, Dec. 20, 1963, Pat. No. 3,299,672. This application Oct. 29, 1970, Ser. No. 85,155
Int. Cl. D04b *9/14*
U.S. Cl. 66—191 **4 Claims**

A blended knit pile fabric having its pile arranged to simulate any natural fur design or in any other ornamental design

of colors, which design is formed in the pile of the fabric during the making or manufacturing of the fabric by varying the physical characteristics of the fibers within each consecutive pile bundle or element during the process of knitting. The pile fabric is made by feeding a plurality of rovings or slivers of discrete fibers into a blending region, blending together the fibers



from each of said rovings in the blending region, delivering said blended fibers to a knitting region, knitting a base fabric in said knitting region, removing bundles of fibers from said blend of fibers, and incorporating the bundles into the base fabric in the knitting region during the knitting of the base fabric.

3,710,598

METHOD OF KNITTING A PILE FABRIC ON A WARP KNITTING MACHINE

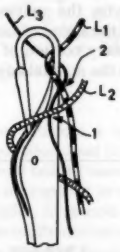
Christian Wilkens, Beethovenstrasse 53, Offenbach am Main, Germany

Filed Jan. 21, 1971, Ser. No. 108,293

Claims priority, application Germany, Jan. 29, 1970, P 20 03 928.5

Int. Cl. D04b *23/08*

U.S. Cl. 66—192 **8 Claims**



A pile fabric is produced on a Raschel knitting machine having one needle bed and three guide bars and swinging the guide bars back and forth twice during the knitting of each course by knitting a ground fabric from the threads of two guide bars and by clamping two portions of each pile thread of the third bar to each knitting needle by means of respective threads from the two guide bars guiding the threads for the ground fabric. Pile loops are formed from the pile thread portion between the clamping and the knock over edge of the trick plate. Different types of ground fabric may be used, and the pile threads may be secured to the ground fabric with or without the use of a fall plate.

3,710,599

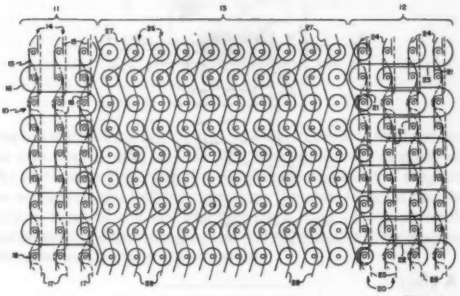
WARP KNIT COMBINATION ELASTIC FABRIC HAVING INTEGRALLY KNIT TWO-WAY STRETCH AND ONE-WAY STRETCH PORTIONS, AND METHOD OF MAKING SUCH FABRIC

Louis Sarmiento, Hasbrouck Heights, N.J., assignor to International Stretch Products, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 21,409, March 20, 1970. This application Dec. 3, 1970, Ser. No. 94,837

Int. Cl. D04b *23/08*

U.S. Cl. 66—193 **7 Claims**

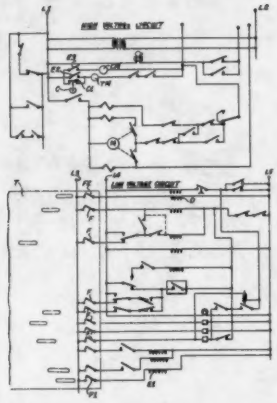


The invention is directed to a combination elastic fabric of warp knit construction, as distinguished from circular knit, woven, etc., which is comprised of distinct but integrally knitted portions having two-way elasticity and one-way elasticity, respectively, and being characterized particularly by the ability of the fabric to lay flat in its relaxed condition for handling and cutting. In one of its most advantageous forms, the new combination elastic fabric is constructed in the form of a girdle fabric having a body portion of two-way elasticity and selvedge portions of one-way elasticity. One selvedge portion constitutes a waistband elastic, while the other selvedge portion constitutes a leg band elastic. The thus integrally knitted combination fabric may be conveniently handled, cut and sewn to construct a girdle or panty girdle, realizing significant economies relative to conventional manufacturing processes.

The new combination fabric of the invention is characterized by the fact that the different component portions of the fabric can have significantly different characteristics of extensibility. For example, the selvedge portion may have a significantly greater extensibility than the body portion and one selvedge portion may have a significantly greater extensibility than the other, as may be desired in the construction of a garment having waistband and leg band selvedges, for example.

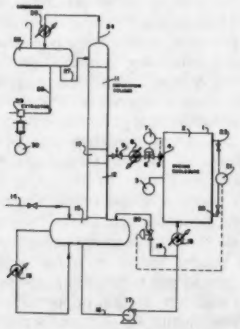
The fabric of the invention incorporates elastic yarns in its construction. However, in each instance, the elastic yarn is laid in, rather than knitted in, to the fabric structure. In the one-way stretch portions of the fabric, the elastic yarns are laid in across one needle space; in the two-way stretch portions of the fabric, the elastic yarns are either laid in across more than one needle space, or a bidirectional stretch is derived from a ground stitch extending across more than one needle space. In addition, certain important relationships are maintained between yarn weights and knitting tensions, in order to achieve the desired different degrees of extensibility in the various component portions of the fabric, while, at the same time, retaining the critically important ability of the fabric to lay flat in its relaxed condition.

3,710,600
SLOW-DOWN CIRCUIT FOR TAPE TYPE WASHING MACHINE CONTROL
Norvin L. Pellerin, New Orleans, La., assignor to Pellerin Milnor Corporation, Kenner, New Orleans, La.
Filed Jan. 25, 1971, Ser. No. 109,356
Int. Cl. D06f *33/02*
U.S. Cl. 68—12 R 5 Claims



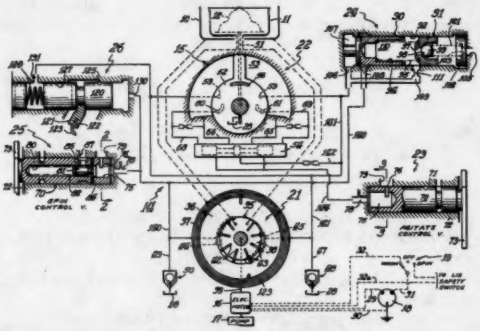
A cleaning machine controlled by the passage of a slotted insulating tape between a conductive surface and conductive fingers connected in a plurality of individual control circuits, so that when a slot passes under a finger, the circuit through that finger is closed. One of these circuits is connected to slow-down the speed at which the tape is advanced whenever the passage of one of said slots beneath the finger in said one circuit causes that circuit to close, thus increasing the length of time that any circuit closed by a slot parallel to said one slot remains closed.

3,710,601
INSTALLATION FOR TREATMENT OF TEXTILE MATERIALS
Remy Blanc, Lyon; Alain Chapuis, Saint-Clair eu Rhone, and Pierre Gagne, Villeurbanne, all of France, assignors to Soltex, Paris, France
Filed May 6, 1971, Ser. No. 140,836
Claims priority, application France, May 15, 1970, 7017741
Int. Cl. D06f *43/08*
U.S. Cl. 68—18 C 11 Claims



Apparatus for the treatment of textile materials in a bath, such as a dyeing bath containing solvents and diluents for the dye, including an enclosure for the dyeing, means for continuously drawing off a fraction of the bath, means for separating the bath components, recycling means for reintroducing the separated portion into the bath, and regulating devices for regulating the volume of the fraction drawn off from the enclosure.

3,710,602
HYDRAULIC TRANSMISSION
Robert W. Wayman, Bloomfield Hills, Mich., and Howard C. Wiemer, Muncie, Ind., assignors to Borg-Warner Corporation, Chicago, Ill.
Division of Ser. No. 772,298, Oct. 31, 1968, Pat. No. 3,635,023. This application May 24, 1971, Ser. No. 146,402
Int. Cl. F16d *31/06*; D06f *23/04*
U.S. Cl. 68—23.7 9 Claims

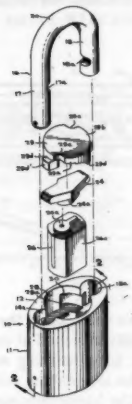


A hydraulic transmission for independently driving an agitator motor and a spin mechanism of an automatic washing machine with control mechanism for independently controlling the speed of each by using a manually adjustable rotary valve to establish the size of a variable size orifice in the fluid exhaust line from the agitator motor and the spin mechanism to control the speed of same. The rotary valves are positioned in a stationary portion of the transmission to provide for connection to the manual adjustment means.

3,710,603
KEY OPERABLE PADLOCK WITH ROTATABLE SEAL FOR PLUG
Harry C. Miller, Rochester, N.Y., assignor to Sargent & Greenleaf, Inc., Rochester, N.Y.
Filed Sept. 28, 1971, Ser. No. 184,521
Int. Cl. E05b *67/24*
U.S. Cl. 70—38 A 19 Claims

A high security padlock having a padlock casing and a generally U-shaped shackle. The casing has a central bore located between the sockets to receive and removably house a key lock plug, operable by a key slot in the bottom of the padlock body. A sealing cover member forms an upper closure for the bore above the plug and includes a pair of concave recesses which normally interfit with surface portions of the

shackle legs and also includes interlock means displaced angularly from these recesses to interlock with the main body portion when either of the shackle legs are located in their associated sockets in the padlock body.



3,710,604

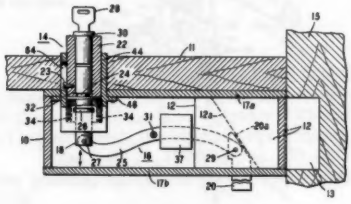
DOOR LATCHING APPARATUS

Herman Cillick, 82 Roundtop Road, Warren Township, Somerset County, N.J.

Filed Aug. 9, 1971, Ser. No. 170,091

Int. Cl. E05b *55/00;* **E05c** *1/06*

U.S. Cl. 70—141 **13 Claims**



Door latching apparatus includes a cylinder lock having a translatable rod, a spring-loaded dead bolt and linkage means coupling the rod to the dead bolt to cause alternate retraction and extension of the bolt in response to operation of the lock. The linkage means includes a reverse-curve arm pivotally mounted between, and pivotally connected to, the rod and to a push-button having an inclined surface adapted to urge against a corresponding inclined surface of the dead bolt. The lock is rendered substantially pick-proof by the inclusion therein of a bifurcated plug having separate and independent inner and outer portions.

3,710,605

KEYLESS ROD LOCKING DEVICE

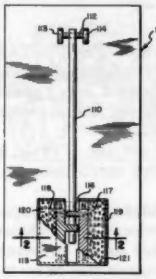
Emmanuel M. Trikilis, 3122 West Boulevard, Cleveland, Ohio

Filed Sept. 16, 1970, Ser. No. 72,601

Int. Cl. A44b *9/18;* **E05b** *47/00*

U.S. Cl. 70—196 **2 Claims**

A lock fastening device comprises a pivotally mountable fastening rod or member and a retaining mechanism including a slot for receiving a length of the fastening member, one or more magnetically engageable locking tabs, and compressible elastic means for projecting the locking tabs into the receiving slot for preventing the removal of the fastening member. In a preferred arrangement, the tabs include cam surfaces so that they are forced out of the receiving slot as the fastening member is forced toward the locking position. When the rod



reaches the locking position, it no longer contacts the tabs and the tabs spring back into the slot, locking the rod in position. The rod can be removed by a suitable arrangement of magnets for retracting the locking tabs from the slot. In addition, the bottom layer of the slot can include a layer of compressible elastic material for springing the rod from the locking position when the locking tabs are retracted.

3,710,606

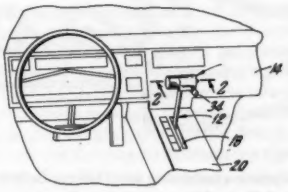
LOCKING DEVICE FOR CAR STICK SHIFT

Ernest A. Prince, 231 Wood Street, Rutherford, N.J.

Filed Aug. 12, 1971, Ser. No. 171,171

Int. Cl. B60r *25/06;* **G05g** *5/00*

U.S. Cl. 70—203 **3 Claims**



A device for locking a hand operated shift which has a movable shift stick of a type which is located on a central panel in the driver's compartment between the two seats includes a cylinder member which fits over the handle portion of the stick shift at a location to enclose a movable release button. The release button must be depressed in order to move the stick shift from one gear position to another. The locking device includes an opening or slot in the tubular member which covers the handle part and it extends on the other side of the stick. It includes top portions bounding the slot with a lock shank receiving opening so that the lock shank may block the slot to keep the locking cylinder from being dislodged from a position blocking the movement of the release button.

3,710,607

MOBILE METAL FORMING MACHINE FOR SIDING

Glen E. Beymer, 83363 North Enterprise, Creswell, Oreg.

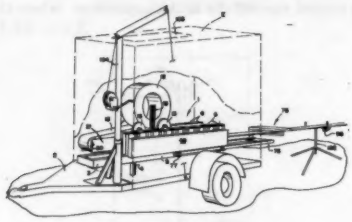
Filed July 2, 1971, Ser. No. 159,264

Int. Cl. B30b *15/00;* **B21b** *1/00*

U.S. Cl. 72—30 **8 Claims**

A machine for the production of metal siding for buildings is disclosed as being supported by a mobile base for travel of the

machine to a job site. Sheet stock, in roll form, is carried by the machine and travels through a plurality of rolls to shape marginal areas of the sheet stock into siding configuration. Roll elements for flattening of the metals marginal areas are provided while additionally rotating dies punch said marginal



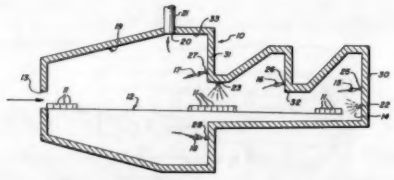
areas for "weep" holes and nailing openings. A saw table supports the siding produced and includes a guideway for a saw which may cut either square or beveled ends on the siding. Electrical switch controls may be set to automatically stop the machine after a desired length of siding has been produced.

3,710,608

METHOD FOR HEATING UNFINISHED TELLURIUM-CONTAINING STEEL ARTICLES BEFORE HOT ROLLING

Ronald D. Hentz, Crown Point, Ind., and Gary W. Henger, Homewood, Ill., assignors to Inland Steel Company, Chicago, Ill.

Filed Dec. 2, 1970, Ser. No. 94,282
Int. Cl. B21b *9/00*; B21d *31/00*
U.S. Cl. 72—38 **9 Claims**



Heating tellurium-containing steel billets, before hot rolling, by moving the billets along a path in a furnace having an oxidizing atmosphere. Providing and maintaining a gas blanket around the billets to protect them from surface oxidation along the hotter portions of the path. Combusting the blanket gas at a cooler portion of the path before the gas is exhausted from the furnace.

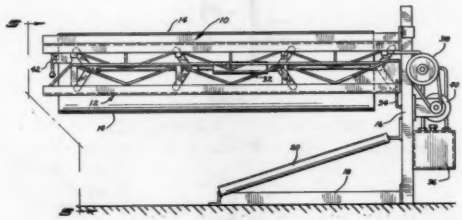
3,710,609

TUBE SHAPING DEVICE

Cecil H. Jones, 153 West Glencrest Drive, Mankato, Minn.

Filed Dec. 30, 1970, Ser. No. 102,848
Int. Cl. B21d *31/04*
U.S. Cl. 72—392 **10 Claims**

Two longitudinal tube forming members are dimensioned to fit within the interior of a hollow tube and to impress a predetermined cross-sectional shape on the tube when they are pressed against opposing interior surfaces thereof. The tube forming members are joined together in substantially parallel relationship by a symmetrical toggle mechanism which varies the spacing between the tube forming members in response to the movements of a hydraulic ram. The hydraulic ram is mounted in the middle of the toggle mechanism so as to apply longitudinally balanced forces to the toggle mechanism and thereby to equalize the distribution of forces in the structure when the tube forming members are pressed



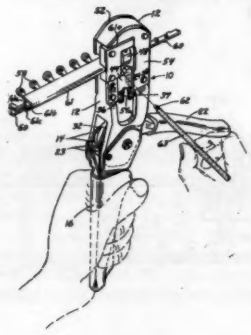
against opposing interior surfaces of the tube. The upper tube forming member is rigidly attached at one end to a supporting column and the lower tube forming member is slidably attached at one end to the supporting column so that it can be raised and lowered by the toggle mechanism to vary the spacing between the two tube forming members.

3,710,610

WIRE TERMINAL CRIMPING TOOL

William S. McCaughey, Naperville, Ill., assignor to The Bunker-Ramo Corporation, Oak Brook, Del.

Filed June 5, 1970, Ser. No. 43,688
Int. Cl. B21d *9/08*
U.S. Cl. 72—410 **4 Claims**



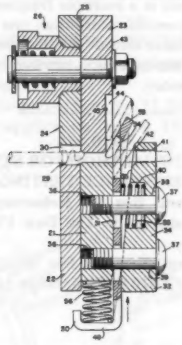
Tool for attachment of terminals to pre-stripped wires provides a combination crimping and shearing anvil, two crimp dies which are sequentially shiftable relative to the anvil, and a shear blade actuator movable into operative relation with the shearing member of the anvil. A group of terminals, joined by an integral carrier, is manually advanced through a magazine, to position the leading terminal between the dies and anvil. The magazine confines only the end of the terminal which is to be attached to the wire, and thus permits any desired size or conformation of the other end. The pliers-handles of the tool are held in one hand while the wire, held by the other hand, is inserted between the die and anvil members and against a wire stop. Squeezing the handles moves the two dies in sequence, and the actuator, toward the anvil, crimping the terminal (1) onto the wire, (2) onto the insulation, and (3) shearing the terminal from the carrier. A lever on a screw interposed between the slide block and the dies permits selection of the degree of closure between the dies and anvil, to achieve proper crimp on predetermined wire size ranges.

3,710,611

TERMINAL LOCATOR FOR CRIMPING TOOL

George J. Filia, Shelton, Conn., assignor to Sargent & Company, New Haven, Conn.

Filed Dec. 8, 1970, Ser. No. 96,052
Int. Cl. B21d 9/08
U.S. Cl. 72—410 10 Claims



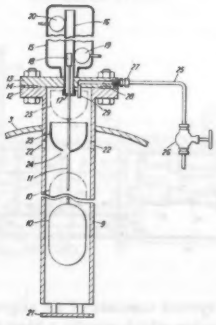
This specification discloses a crimping tool for attaching a terminal to an insulated conductor and which tool includes a terminal locator which accurately positions the terminal relative to the dies of the tool. A terminal with which the tool is intended for use includes a tubular end portion terminating in a pair of opposed notches spaced from the terminal end. A pair of flanges upstand from the terminal on the sides of the notches remote from the tubular portion. These notches are used in locating the terminal relative to the crimping dies. The locator consists of a slide that is mounted on the outer face of a jaw of the tool and has an inclined tongue that is adapted to be fitted in the notches in the terminal. The slide is maintained against the jaw face by a spring and is biased to an effective position by an expansion coil spring mounted at the lower edge of the jaw.

3,710,612

FLOAT OPERATED SIGNALLING DEVICE

Robert Innes, Beaconsfield, and Ernest Albert Morrison, Gerrards Cross, both of England, assignors to Roland Trist Controls Limited, Slough, Buckinghamshire, England

Filed April 26, 1971, Ser. No. 137,443
Claims priority, application Great Britain, May 8, 1970, 22,397/70
Int. Cl. G01f 25/00
U.S. Cl. 73—1 R 9 Claims



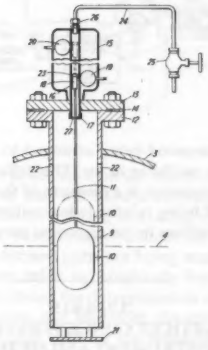
The invention is concerned with a float operated signalling device of the kind in which a magnet follows the movement of a float in a liquid container and operates signal controls through a non magnetic wall. An open topped pan having a drain opening is attached to the magnet/float assembly and an auxiliary liquid supply is provided for depositing liquid into the pan at a rate greater than that at which it can drain out of the pan. When the pan contains liquid the float is dunked below the liquid in the container so that the magnet operates the signal controls for test purposes.

3,710,613

FLOAT OPERATED SIGNALLING DEVICE

Robert Innes, Beaconsfield, Buckinghamshire, and Ernest Albert Morrison, Gerrards Cross, both of England, assignors to Roland Trist Controls Limited, Slough, Buckinghamshire, England

Filed April 26, 1971, Ser. No. 137,444
Claims priority, application Great Britain, May 8, 1970, 22,396/70
Int. Cl. G08b 29/00; G01f 25/00
U.S. Cl. 73—1 R 9 Claims



The invention is concerned with a float operated signalling device in which a magnet follows the movement of a float in a closed liquid container, the magnet reciprocating in a non magnetic tube through which it operates signal controls. An auxiliary liquid supply is connected to the tube for providing a temporary hydraulic pressure differential across the piston or a part attached to the piston so that the float is dunked below the liquid level and the magnet operates the signal controls for test purposes.

3,710,614

HIGH PRECISION WIDE DYNAMIC RANGE VISCOUS LOSS MEASURING APPARATUS

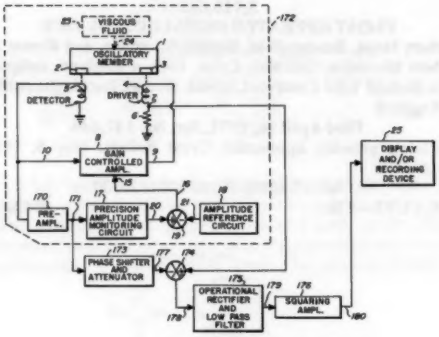
Hans R. Oppliger, Piscataway, N.J., assignor to National Metal and Refining Company, Inc., Edison, N.J.

Filed Sept. 9, 1971, Ser. No. 178,965
Int. Cl. G01n 11/16
U.S. Cl. 73—59 5 Claims

A viscosity measuring system especially useful in pollution and chemical process control applications. A variable gain amplifier drives a magnetic coil which causes a vibratory member to oscillate. The amplitude of the oscillations is sensed as an AC voltage by a transducer, and converted to a DC voltage by an amplitude monitoring circuit. The DC voltage, which represents the instantaneous amplitude of mechanical oscillation, is compared to a reference DC voltage which represents the desired amplitude of oscillation. The resulting error signal is utilized to control the gain of the amplifier in such a manner that the amplitude of mechanical oscillation is maintained constant and equal to the desired amplitude over a wide range of viscous loss. The viscosity of the fluid in which the torsion member is immersed is derived from an output signal which is a measure of the power provided by

the amplifier to the magnetic coil in order to maintain the desired constant amplitude of oscillation. Preferably, the output signal is obtained from the voltage developed across a resistor in series with the magnetic coil.

The output signal so obtained is compared to a signal derived from the AC voltage sensed by the transducer, the



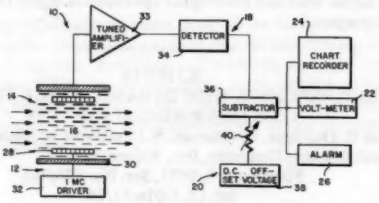
signals being compared being arranged to be equal when the torsion member oscillates in air. The difference signal resulting from the comparison is a measure of the fluid viscosity, the difference signal being relatively insensitive to electrical noise and to small variations in the electrical parameters of the measuring system.

3,710,615

ACOUSTIC PARTICLE CONCENTRATION MEASURING INSTRUMENT AND METHOD

Robert L. Johnson, Marina Del Rey; Kenneth R. Overoye, and Pravin G. Bhuta, both of Torrence, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed March 25, 1971, Ser. No. 127,872
Int. Cl. G01n *29/02*
U.S. Cl. 73—61 R **13 Claims**



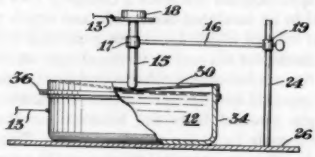
A liquid or solid medium is acoustically examined to detect or measure the concentration of a selected entrained particle matter of different acoustic impedance than the medium and given average particle size by transmitting through the medium to acoustic transducer means acoustic wave energy of a selected frequency such that the wave energy is attenuated by scattering and diffraction by all the constituents of the medium down to and including the particle size of the selected matter, and comparing the transducer output voltage produced by the incident wave energy with a reference transducer output voltage produced by acoustic wave energy which is attenuated by all the constituents except the selected particulate matter to obtain a resultant voltage representing the concentration of the selected matter. This resultant voltage may be utilized to drive a meter or recorder for displaying concentration and/or an alarm for signalling a critical concentration. One disclosed embodiment of the invention is a single frequency system for use in applications where the medium contains only the selected particulate matter to be detected and employs an external reference voltage source. A second disclosed embodiment is a multiple frequency system for use where the medium contains more than one particulate matter and utilizes a transducer output as a reference voltage. A primary application of the invention involves measuring the concentration of oil in water.

3,710,616

APPARATUS AND METHOD FOR STRESS CRACK RESISTANCE TESTING

Vernon J. Smith, and Ben W. Heinemeyer, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sept. 23, 1970, Ser. No. 74,731
Int. Cl. G01b *7/16;* **G01n** *3/20*
U.S. Cl. 73—88 R **11 Claims**



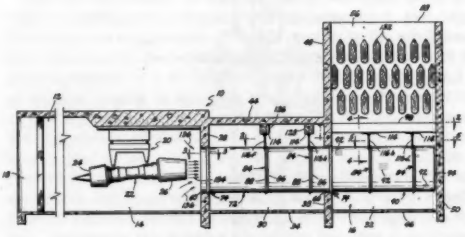
Apparatus and method for stress crack resistance testing of plastic articles wherein a weighted rod stresses the plastic article in contact with a stress crack agent and an electrically conductive liquid until the liquid penetrates the stress cracks which appear. The liquid closes an electric circuit and the signal thus developed is recorded as a function of time.

3,710,617

MEANS FOR FLEXIBLY SUPPORTING AN EDUCTOR TUBE USED IN TESTING JET ENGINES

Ronald E. Andersen, Minneapolis, Minn., assignor to Central Engineering Company, Minneapolis, Minn.

Filed June 16, 1971, Ser. No. 153,625
Int. Cl. G01m *15/00*
U.S. Cl. 73—116 **6 Claims**



An eductor system consists of an augmentor tube, with a suitable termination which may be a blast tube. Each tube has one end thereof fixedly anchored and has its other end free to move due to thermal expansion with respect to the first end. Four flexible or resilient plates extend downwardly from a pair

of overhead structural beams, the lower ends of the flexible plates being fixedly attached to flanges encircling the tube. In this way, the tube is supported by the flexible plates, yet it is free to expand longitudinally due to the hot gases flowing therethrough. Also, the plates, together with the beams and the way they are mounted, appreciably lessen any tendency for the basket to vibrate vertically or horizontally.

3,710,618

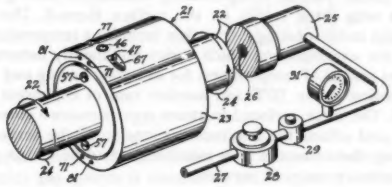
TORQUE SENSING INSTRUMENTS

Armin B. Pagel, Janesville, Wis., assignor to Carlin Corporation, Beloit, Wis.

Continuation-in-part of Ser. No. 32,218, April 27, 1970, abandoned. This application Jan. 18, 1971, Ser. No. 107,359

Int. Cl. G01l *3/04*

U.S. Cl. 73—136 A **29 Claims**



An improved torque sensing unit of simplified construction comprises a torsion shaft provided with a plurality of radial reference members projecting into corresponding radial holes in a tubular sleeve member supported at one end by the torsion shaft in concentric relation thereto. Torsional stress in the shaft is determined, preferably by pneumatic gaging means, by measuring the tangential displacement of the reference members relative to adjacent tangentially adjustable reference surfaces located within the radial holes in the sleeve member. Various novel construction features provide a simple and very rugged unit of compact symmetrical configuration that is highly resistant to error inducing influences. Of particular importance are the novel means employed to isolate connecting joints between different elements of the unit from torsional forces to prevent such forces from producing relative movement between the mating surfaces of those joints.

3,710,619

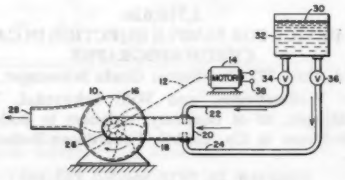
AIR DYNAMOMETER HAVING WATER INJECTION SPRAY NOZZLES

John W. McClure, Charleston, S.C., assignor to Arco Corporation, Charleston, S.C.

Filed June 1, 1971, Ser. No. 148,803

Int. Cl. G01l *3/20*

U.S. Cl. 73—134 **5 Claims**



The range of operation of an air dynamometer used as a power absorption device in testing prime movers such as electric motors, gas turbines and internal combustion engines is improved by injecting a water spray into the air inlet of the air dynamometer so that the working fluid is a mixture of air and water.

3,710,620

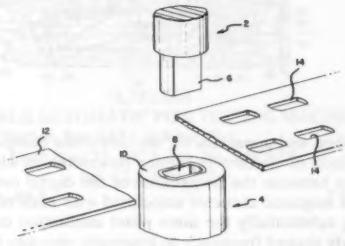
TESTING OF PHOSPHOR BRONZES

Edward Peter Brandeau; Quentin Roosevelt Chaffee, and Robert Lewis Gitt, all of Winston-Salem, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 21, 1970, Ser. No. 99,814

Int. Cl. G01n *33/20*

U.S. Cl. 73—159 **3 Claims**



The invention is predicated on the discovery that phosphor bronze strip may or may not have a thin coating of an oxide thereon which is formed during annealing of the strip. Coating, when present, substantially reduces die life when precision stamped and formed parts are being made from the strip. Coating is not detectable by previously known quality controls. Method is disclosed for determination of the presence or absence of the coating and, therefore, the suitability of a given lot of phosphor bronze strip for the manufacture of stamped and formed parts.

3,710,621

SING-AROUND TYPE ULTRASONIC MEASURING INSTRUMENT

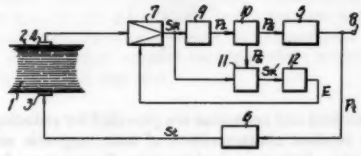
Hidekazu Asada, Tokyo, Japan, assignor to Kabushikikaisha Tokyo Keiki, Tokyo, Japan

Filed Feb. 2, 1971, Ser. No. 111,862

Claims priority, application Japan, Feb. 10, 1970, 45/11261

Int. Cl. G01f *1/00;* **G01p** *5/00*

U.S. Cl. 73—194 A **3 Claims**

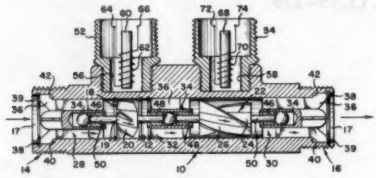


A sing-around type ultrasonic measuring instrument having an ultrasonic transmitter and an ultrasonic receiver, a receiving amplifier circuit, and a transmitter circuit, in which the amplitude of a received signal derived from the receiving amplifier circuit is detected to produce an automatic gain control signal for automatically stabilizing the amplitude of the received signal and a signal to be transmitted from the transmitter is delayed for a fixed period of time relative to the received signal.

3,710,622
VISCOSITY COMPENSATED DUAL ROTOR TURBINE FLOWMETER

Jack Hammond, and Charles L. Boyd, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 859,743, Sept. 22, 1969, abandoned. This application Feb. 24, 1971, Ser. No. 118,465
Int. Cl. G01f *1/10*
U.S. Cl. 73—231 R **21 Claims**

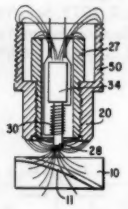


Method and apparatus for the electronic compensation for the effects of viscosity in turbine flowmeters in which the difference between the frequencies of the digital output signals from a magnetic detector associated with each of two rotors having substantially the same water calibration constant and similarly shaped frequency to kinematic viscosity ratio curves is either subtracted from or added to the lesser of the two output signal frequencies or substracted from the greater of the two output signal frequencies, depending on the value of the ratio of frequency to kinematic viscosity, and appropriately scaled for direct reading.

3,710,623
MAGNETIC PICKUP ELEMENT ADAPTER FOR FLOWMETERS

Charles L. Boyd, Duncan, Okla., and James D. Roach, Yuma, Ariz., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 881,493, Dec. 2, 1969. This application Jan. 20, 1972, Ser. No. 219,396
Int. Cl. G01f *1/08*
U.S. Cl. 73—231 R **1 Claim**

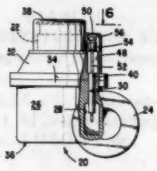


A method and apparatus are provided for reducing the nonlinear readout characteristics of such magnetic sensing and measuring devices as turbine type flowmeters. An adapter bushing is used to mount an electromagnetic pickup element within a turbine type flowmeter. The body of the meter into which the pickup element is mounted consists of a material having a low permeability, while the adapter consists of a ferromagnetic material having a high permeability. In operation, the electromagnetic pickup element is disposed within the body of the device adjacent a moving member which is to be monitored. The surrounding adapter functions to shape the flux lines generated by the pickup element into a path having a low flux density in the area adjacent the moving member which low density, in turn, reduces the magnetic drag on such member.

3,710,624
METER VOLUME COMPENSATING MECHANISM

Carl J. Kugler, Philadelphia, Pa., assignor to The Singer Company, New York, N.Y.

Filed Dec. 9, 1971, Ser. No. 206,298
Int. Cl. G01f *15/04*
U.S. Cl. 73—233 **7 Claims**

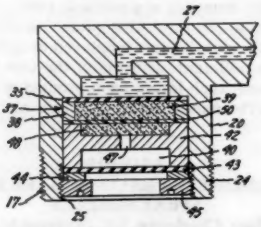


A meter volume compensating mechanism having a frustrum with three angles on the surface thereof. The meter volume compensating mechanism includes a temperature sensor, the expansion of which varies nonlinearly between different ranges of temperature; for example: having one rate of expansion above 50°F and another rate of expansion below 50°F. The three-surfaced frustrum approximates a curved surface and offsets the nonlinear expansion of the sensor, permitting the corrected flow measurement to be within plus or minus one percent (1 percent).

3,710,625
MINIATURIZED AUTOMATIC DECOMPRESSION METERS

Marcus P. Borom, and Lyman A. Johnson, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sept. 16, 1971, Ser. No. 181,106
Int. Cl. G01l *7/00*
U.S. Cl. 73—432 R **6 Claims**



A decompression meter in which a permselective membrane is used to simulate gas uptake and release by a diver's body tissues is miniaturized by filling the bourdon tube gauge chamber with liquid and providing a time-constant gas chamber between the ambient-pressure gas chamber and the gauge chamber.

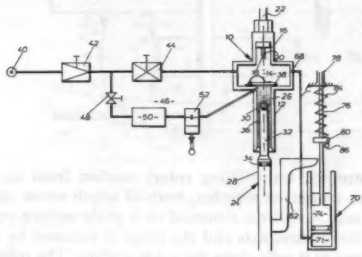
3,710,626
DEVICE FOR SAMPLE INJECTION IN GAS CHROMATOGRAPHS

Eginhard, Otte, 777 Uberlingen; Gisela Schwenger, 775 Constance Wollmatingen, and Willi Schwenkel, 7777 Unteruhldingen, all of Germany, assignors to Bodenseewerk Perkin-Elmer & Co. GmbH, Ueberlingen/Bodensee, Germany

Filed Oct. 28, 1971, Ser. No. 193,395
Claims priority, application Germany, Nov. 11, 1970, P 20 54 426.7
Int. Cl. G01n *1/22*
U.S. Cl. 73—422 GC **8 Claims**

In prior sample introduction systems for a gas chromatograph of the type where sealed sample vessels are inserted by a

cartridge-like plunger and the vessel is then opened within the inlet to the chromatograph to release the sample, the carrier gas flow "collapses" whenever the cartridge-like plunger is withdrawn since the system is opened to atmosphere. The carrier gas flow controller requires a long time to build up normal flow again, and also air is allowed to enter the carrier gas system. To eliminate these problems a gate is included in the



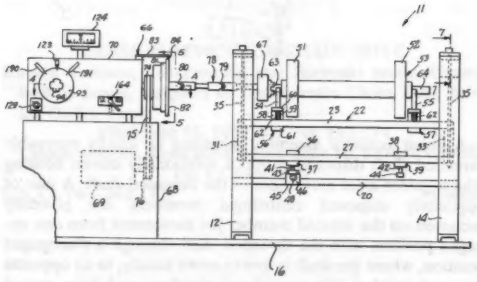
inlet section which closes off the path to atmosphere before the carrier gas system is connected to this gate. As the cartridge plunger closes off the atmospheric end of this gate, a "-dummy" piston moves along with the cartridge to open a volume equal to the volume displaced by the advancing cartridge, so that no pump action occurs. Preferably the gate is filled with carrier gas as the plunger is inserted to avoid introduction of air into the system.

3,710,627

GYROSCOPIC-ACTION DYNAMIC BALANCER

Albert J. Trahan, 1717 5th Street, Lake Charles, La.

Filed Aug. 14, 1970, Ser. No. 63,807
Int. Cl. G01m *1/22*
U.S. Cl. 73—464 **13 Claims**



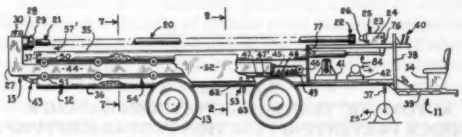
A dynamic balancer for a wheel and axle assembly consisting of an upstanding supporting frame in which a rectangular swingable axle-bearing carriage is suspended by four flexible corner cables. The carriage can be clamped to pivot on a vertical axis beneath either wheel so as to allow the respective wheels to be separately balanced. A drive motor is coupled to a double wheel and axle assembly journaled on the carriage through a shaft including a two-segment wave rectification commutator engaged by diametrically opposite angularly adjustable brushes connected in a circuit including a meter and respective selectable magnetic transducer assemblies mounted on the supporting frame and having cooperating movable signal generating elements secured to the carriage, to thereby generate signals corresponding to the horizontal forward and rearward excursions of the carriage caused by unbalance of the wheels as the wheel and axle assembly rotates. The brushes can be adjusted so that their phase positions correspond with that of the forward and rearward excursions, and so that the degree of adjustment, measured on an angle scale, provides information to establish the angular location for securing balancing weights on the wheels.

3,710,628

PORTABLE AUTOMATIC PIPE TESTING MACHINE

Herbert D. Horton, Box 6434, Odessa, Tex.

Filed May 25, 1971, Ser. No. 146,637
Int. Cl. G01m *3/04*
U.S. Cl. 73—49.5 **7 Claims**



A portable automatic pipe testing machine comprising a longitudinally disposed main frame having pipe engaging spaced apart arms attached thereto. Each arm has a claw located at one extremity thereof and the remaining end portion of each arm is pivotally attached to the frame. Spaced apart rotating heads are adapted to move towards and away from each other, longitudinally of the frame, to permit engagement with the terminal ends of the longitudinally disposed pipe which is to be tested. A source of pressurized fluid is adapted to flow into and out of at least one of the heads so as to hydrostatically test the interior of the pipe.

The arms are arranged with respect to spaced apart pipe racks so as to enable the claw to be moved by the arm in a manner to engage a pipe on one rack, and to transfer the pipe into a location respective to the machine which enables each of the heads to be attached thereto. After the pipe has been tested, the heads are unfastened from the terminal ends of the pipe, and the claw then releases the pipe, where it moves by gravity onto the other pipe rack.

3,710,629

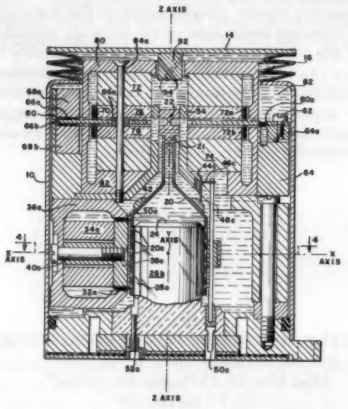
THREE-AXIS ACCELEROMETER

Waclaw Wojtulewicz, Paterson, N.J., assignor to The Singer Company, New York, N.Y.

Filed July 22, 1970, Ser. No. 57,239
Int. Cl. G01p *15/08*
U.S. Cl. 73—510 **7 Claims**

An accelerometer wherein proofmass means is adapted for movement with respect to three coordinate axes in response to

acceleration along the axes. A signal is generated in response to the movement for providing a readout proportional to ac-



celeration, and for restoring the proofmass means to a null position.

3,710,630

AUTOMATIC TRANSMISSION SYSTEM HAVING A SHOCK PREVENTING FUNCTION IN GEAR SHIFTING

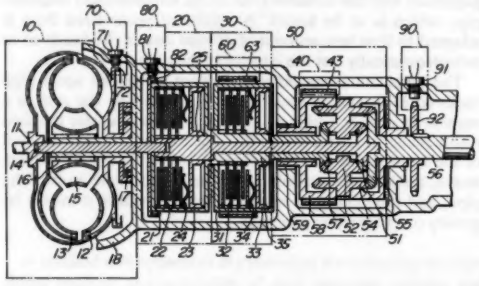
Masaharu Sumiyoshi, Toyota; Shigeru Sakakibara, Aichi-ken; Osamu Ito, Toyota; Hisato Wakamatsu, Kariya, and Takaaki Kato, Toyohashi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi and Nippondenso Kabushiki Kaisha, Aichi-ken, Japan

Filed July 9, 1970, Ser. No. 53,513

Claims priority, application Japan, July 18, 1969, 44/57185

Int. Cl. F16h *5/42, 47/00;* **B60k** *21/00*

U.S. Cl. 74—752 A **5 Claims**



An automatic transmission comprising as the essential units thereof a torque converter transmission, a hydraulic actuation circuit and electrical circuitry for controlling the distributor valve incorporated in the hydraulic actuation circuit, wherein the working oil pressure applied to the transmission is reduced according to a signal generated upon gear change so as to eliminate the shock caused during the gear change; whereas while the torque is being transmitted excepting during such gear change, the working oil pressure is maintained at a sufficiently high value in order to prevent the slippage of the friction engaging means in the transmission.

3,710,631

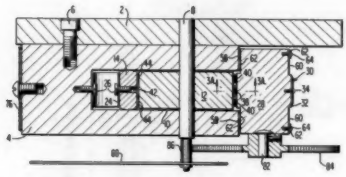
ROTARY MOTION APPARATUS

Dean E. Gladow, Albuquerque, N. Mex., assignor to Rolamite, San Francisco, Calif.

Filed Nov. 25, 1970, Ser. No. 92,655

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.2 **20 Claims**



Apparatus for transmitting rotary motion from an input member to an output member, both of which rotate about a common axis. A roller is mounted on a guide surface concentric with the central axis and the roller is retained by a thin flexible band as it rolls along the guide surface. The roller acts as a planetary and is connected between the input and output members. Relative sizes of the roller and input and output members can be selected to provide any desired amount of rotary motion reduction or amplification, including high degrees of amplifications not readily accomplished by other means.

3,710,632

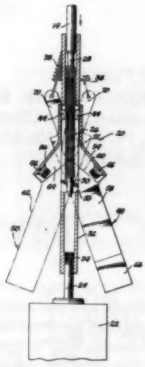
LINEAR ACTUATOR ASSEMBLY

Thomas M. Tucker, Royal Oak, Mich., assignor to McCord Corporation, Detroit, Mich.

Filed Aug. 16, 1971, Ser. No. 171,932

Int. Cl. F16h *29/20*

U.S. Cl. 74—89.15 **12 Claims**



A linear actuator assembly including an axially moveable threaded shaft disposed within a rotationally driven housing which guides axial movement of the threaded shaft. A pair of oppositely disposed centrifugal members are pivotally mounted on the rotated member for movement from one engaged position with the threaded shaft through a disengaged position, where the shaft is free to move axially, to an opposite engaged position. The centrifugal members each have spaced half nuts and one pair of half nuts engage the threaded shaft upon rotation of the housing in one direction to move the shaft axially in the first direction and the other half nuts threadedly engage the shaft and move the shaft in the opposite direction upon rotation of the housing in the opposite direction. The limits of the threaded portion of the shaft are defined by lengths of reduced cross section. These lengths of reduced cross section limit the axial movement of the shaft as the half nuts disengage the threaded portion of the shaft by moving axially into one of the lengths of reduced cross section.

3,710,633

MACHINE TOOL CARRIAGES

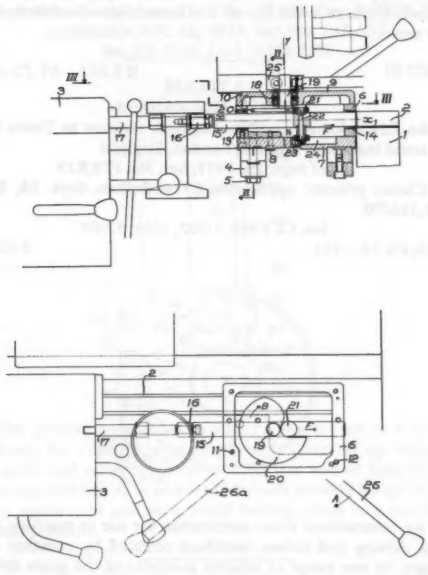
Jules Louis Jeanneret, 13 a 21, rue H. Gelin, Niort, France

Filed March 29, 1971, Ser. No. 128,657

Claims priority, application France, April 15, 1970, 7013537

Int. Cl. F16h 21/44

U.S. Cl. 74—107 4 Claims



This invention relates to machine tools of the kind having a bed with slideways thereon and a slide arranged to move on the slideways. In order to enable the slide to be returned to the starting point of the pass, the invention provides a housing secured to the slideways and a rod mounted to move with the slide: the rod carries a spindle on which is mounted a control wheel which rotates against the periphery of a cam pivoted on a pivot pin in the housing perpendicularly to the sliding rod and an operating lever is secured to the pivot pin.

3,710,634

TENSION DEVICE FOR CHAIN DRIVE

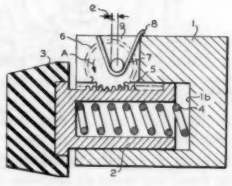
Hiroshi Tamaru, Tokorozawa, and Hiroyuki Inoue, Hanno, both of Japan, assignors to Tsubakimoto Chain, Ltd., Jotoku, Osaka, Japan

Filed June 15, 1971, Ser. No. 153,274

Claims priority, application Japan, June 16, 1970, 45/59652

Int. Cl. F16h 7/12

U.S. Cl. 74—242.11 S 3 Claims



A tension device includes a cylinder with a chamber therein. A plunger having a rubber shoe on the outer end thereof slides within the cylinder and is urged outwardly therefrom by a coil spring. A pinion is eccentrically mounted to engage with a longitudinal rack on the surface of the plunger and is urged by a clip spring to move the plunger into the cylinder. The force of the coil spring is greater than that of the clip spring to normally urge the plunger outwardly from the cylinder and the rack out of engagement with the pinion due to the eccentric mounting of the pinion.

3,710,635

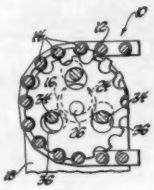
HARMONIC DIFFERENTIAL SPROCKET

Richard M. Whitehorn, 3023 Lakehaven Court, Ann Arbor, Mich.

Filed Jan. 15, 1971, Ser. No. 106,830

Int. Cl. F16h 55/30

U.S. Cl. 74—243 R 4 Claims



A reduction drive assembly for driving a chain or circular drum having a plurality of circular roller elements and including a shaft having first and second opposite disposed offset eccentrics with the first gear movably mounted on the first eccentric and a second gear movably mounted on the second eccentric with the gears having guide holes therein and guide pins extending between a pair of plates and through the guide holes for controlling the relative rotation between the gears. The novelty in the assembly resides in the configuration of the periphery of the gears, i.e., the tooth shape, as defined mathematically in terms of x and y coordinates with the x and y axes passing through the center of the gear. The gears are also novel in that the guide holes extending through the gears are disposed on centers located relative to the crown of a gear tooth and the adjacent root or throat.

3,710,636

METHOD OF PRODUCING A BICYCLE CHAIN SHIFTING DEVICE AND THE SAME PRODUCED THEREBY

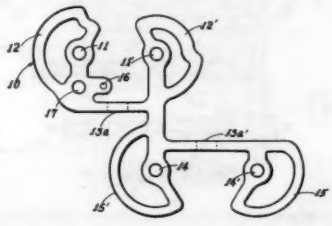
Nobuo Ozaki, Osaka, Japan, assignor to Maeda Industries, Ltd., Osaka, Japan

Filed June 7, 1971, Ser. No. 150,556

Claims priority, application Japan, Nov. 26, 1970, 45/117902

Int. Cl. F16h 11/04

U.S. Cl. 74—217 B 4 Claims

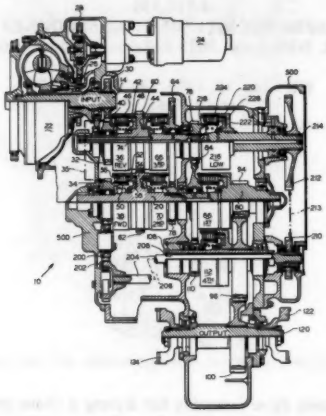


A method of producing a bicycle chain shifting device by stamping a metallic plate and bending the same in the upright directions thereby integrally forming a chain guard body without using a single piece of connecting means. The invention further involves the products provided in said method.

3,710,637
TRANSMISSION

John F. Fisher, Jackson, Mich., and Burton S. Zeller, Parma, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Sept. 30, 1971, Ser. No. 185,110
Int. Cl. F16h *3/08*
U.S. Cl. 74—331 **7 Claims**

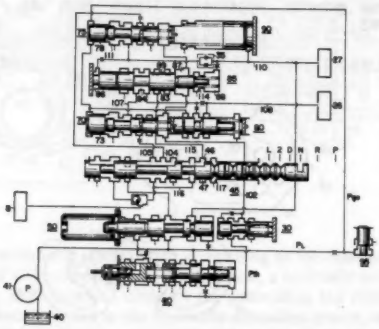


A multispeed reversible transmission has a pair of countershafts that are interconnected for counter rotation and a plurality of gear trains for selectively connecting the countershafts to drive the output shaft at various speed ratios. A pair of input clutches are separately engageable to drive the countershafts in either of the two counter rotative directions and a splitter clutch is provided to drive these shafts in one counter direction at a speed ratio lower than that at which they are driven when the input clutches are engaged.

3,710,638
HYDRAULIC CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION

Ichio Sakai, Aichi-ken, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed July 30, 1971, Ser. No. 167,622
Claims priority, application Japan, July 31, 1970, 45/66564
Int. Cl. F16h *5/42*; **B60k** *17/00*; **F16h** *5/60*
U.S. Cl. 74—336 **1 Claim**

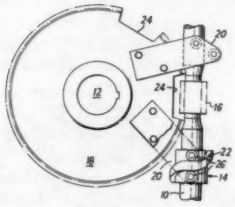


In a hydraulic control system for the automatic transmission of a vehicle, an arrangement is provided for controlling the supply and release of pressurized oil to a first hydraulic servo for operating the vehicle under high speed conditions and a second hydraulic servo for operating the vehicle under low speed conditions. The hydraulic control system includes oil passages connected to the first and second hydraulic servos, a speed-change valve, a timing valve and a composite valve. Based on a signal determined by the running speed of the vehicle the speed-change valve controls the flow of pressurized oil to the first hydraulic servo. The timing valve is in communication with both the first and second hydraulic servos and opens and closes flow to the second hydraulic servo and regulates the flow of pressurized oils to the first hydraulic servo. The composite valve is positioned in the oil passage which supplies the first hydraulic servo and it produces an orifice effect when oil is supplied to the first hydraulic servo and provides normal flow conditions when the oil is released from the first hydraulic servo.

3,710,639
DRIVE MECHANISM

John Edwin Reeve, London, England, assignor to Thorn Electrical Industries Limited, London, England

Filed Sept. 13, 1971, Ser. No. 179,823
Claims priority, application Great Britain, Sept. 16, 1970, 44,316/70
Int. Cl. F16h *35/02, 1/16, 27/04*
U.S. Cl. 74—393 **8 Claims**

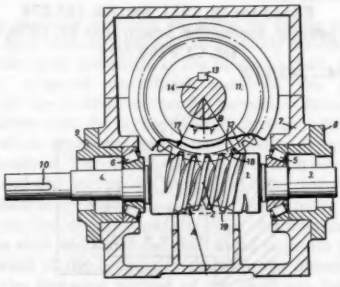


An intermittent drive mechanism for use in machine tools has driving and driven members coupled by constant ratio gears. In one range of relative positions of the gears drive is not transmitted through the gears but instead is transmitted through a cam and cam follower. The cam is so shaped as to cause a gradual deceleration of the driven member to zero followed by a gradual acceleration up to the speed maintained by the constant ratio gears.

3,710,640
WORM GEARS

Donald Arthur Stanger; Frank Yates, both of Durham, and Jack Senior, Northumberland, all of England, assignors to R. W. Transmissions Limited, Hebburn, Durham County, England

Filed Feb. 8, 1971, Ser. No. 113,444
Int. Cl. F16h *1/16*
U.S. Cl. 74—425 **1 Claim**



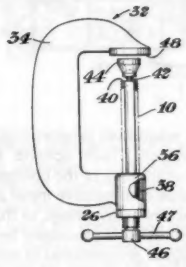
A double enveloping worm gear is made with an involute profile for the worm thread and worm wheel teeth, equal radii for the mean enveloping arc of the worm waist and the worm

wheel pitch circle and the adjacent generatrix of the enveloping cylinder of the worm tangential to the worm wheel base circle; the contact area of the mating surfaces of the worm thread and the worm wheel teeth is thereby increased in comparison with a conventional worm gear of the same size.

3,710,641
LEAD SCREW

Robert F. Anderson, 3613 13th Street, Menominee City, Mich.

Continuation-in-part of Ser. No. 97,086, Dec. 11, 1970, which is a continuation-in-part of Ser. No. 77,980, Oct. 5, 1970. This application Feb. 16, 1971, Ser. No. 115,635
Int. Cl. F16h *1/18*; B25b *1/02*
U.S. Cl. 74—424.8 R **10 Claims**

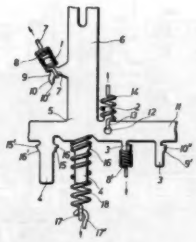


The present invention is to a lead screw for use in a variety of tools, for example, clamps, portable vises, set up tools, set up jacks and other machine or hand tool and/or fastening or securing assemblies in which the threads provide for quick and easy adjustment and sure, rapid locking when in a predetermined position.

3,710,642
SIMPLIFIED SPRING INSTALLATION

Adolf Schneider, Altoberndorf, Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany

Filed May 8, 1970, Ser. No. 35,662
Claims priority, application Germany, May 8, 1969, P 19 23 424.3
Int. Cl. G05g *1/00*
U.S. Cl. 74—470 **3 Claims**

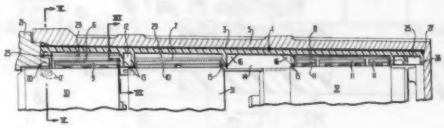


A method and apparatus for guiding a helical spring to proper match-up with a related element while carrying out the sequence of an installation process. The springs are mounted on a bar provided with at least one protrusion having a transition curve for mounting and retaining the spring. The bar is oriented in a direction which is determined by the sequence of the installation process to have the hook or eye of the spring opposite a related element, so that they may be connected. A plurality of bars may be connected in groups to an appropriate member and respective tension springs pre-assembled on them.

3,710,643
BRAKE BAND GUIDE STRUCTURE FOR BRAKE BANDS IN AUTOMATIC TRANSMISSION

Josef Helmer, Aich, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Sept. 25, 1970, Ser. No. 75,412
Claims priority, application Germany, Sept. 27, 1969, P 19 48 937.3
Int. Cl. F16h *57/10*
U.S. Cl. 74—606 R **34 Claims**

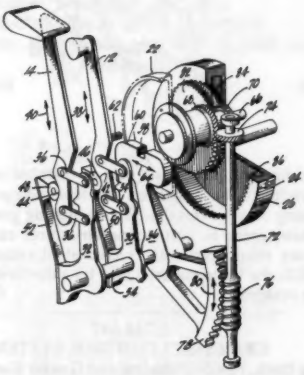


An interchangeable brake band guide structure for use in automatic transmission. Dovetail portions are arranged on the brake band guide structure for slidably engaging correspondingly shaped dovetail groove portions on the transmission housing. The guide structure is tapered in the longitudinal direction and includes axially spaced transverse walls extending in the direction of the brake bands for separating the brake bands from one another in the axial direction. The guide structure is preferably constructed of synthetic resinous material. The guide structure is precluded from sliding out of the dovetail groove by a projection on a transmission housing part which engages the wide end of the guide structure.

3,710,644
CONTROL SETTING APPARATUS

James W. Downing, Buena Park, and Charles V. Harris, Cerritos, both of Calif., assignors to McDonnell Douglas Corporation

Filed July 29, 1971, Ser. No. 167,191
Int. Cl. G05g *1/04*
U.S. Cl. 74—526 **8 Claims**

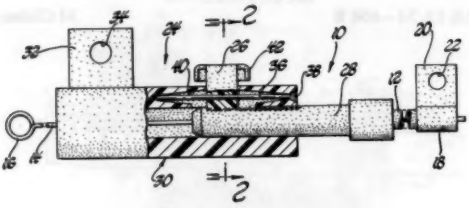


A rotatable detent moved to a preselected position provides a stop for the positioning of flap-slat control handles. A latch pin on the handle fits into the detent when the handle has been moved to this position of alignment. A thumb wheel is used to rotate a worm drive for moving the detent to an infinite number of positions. Additional gearing is provided to rotate an indicator so that the exact position of the detent, and the flap-slat positions, may be readily and easily determined.

3,710,645
REMOTE CONTROL ASSEMBLY

William G. Bennett, Troy, Mich., assignor to Teleflex, Inc., North Wales, Pa.

Filed Oct. 8, 1970, Ser. No. 79,008
Int. Cl. F16c 1/10
U.S. Cl. 74—501 P 9 Claims

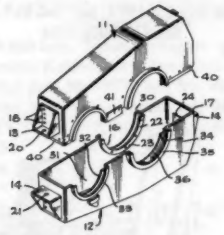


A flexible motion transmitting remote control assembly including a conduit and a motion transmitting core element movably supported by the conduit with the ends thereof extending from the ends of the conduit. An adjustment means disposed adjacent one end of the conduit for allowing the conduit to move longitudinally relative thereto to adjust the distance the core element extends from the conduit. The adjustment means includes a support member adapted for attachment to support structure and having a bore therein in which is disposed a fitting secured to the conduit. A latch is movably supported by the support member and is biased into locking engagement with the fitting on the conduit by a straight metal wire spring.

3,710,646
GEAR HOUSING

David B. Bogan, Los Angeles, Calif., assignor to David B. Bogan Corporation, Sherman Oaks, Calif.

Filed Nov. 23, 1970, Ser. No. 91,720
Int. Cl. B61c 17/08
U.S. Cl. 74—609 8 Claims



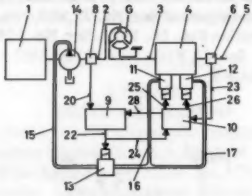
A gear housing provides a pair of matable sections having corresponding cut-off portions and fastening portions so that the housing may be installed about moving gears and shafts. Attachment areas or connecting structures carried on each section are reinforced with riveted steel retainers and load plates while the basic material may take the form of a fiberglas laminate material.

3,710,647
GEAR SHIFT CONTROL SYSTEM

Hansjorg Dach, Friedrichshafen, and Gunter Gackstetter, Langenargen, both of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Postfach, Germany

Filed Aug. 3, 1970, Ser. No. 60,387
Claims priority, application Germany, Aug. 5, 1969, P 19 39 691.9
Int. Cl. F16h 47/00; B60k 21/00
U.S. Cl. 74—731 14 Claims

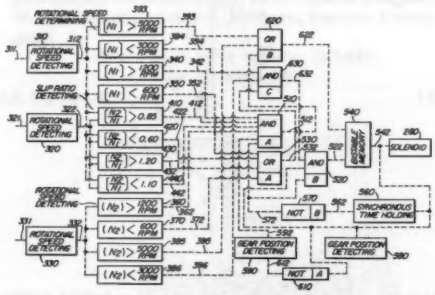
An electro-mechanical system is utilized to control shifting of gears of the transmission of a vehicle driven by an internal combustion engine. Shifting is responsive to torque input and output of fluid torque converters or fluid couplings, and vehicle speed. The system contemplates the use of speed sensors connected to various power transmitting shafts which develop electric signals having a magnitude of current or voltage fed to a computer programmed in accordance with a predetermined formula whereby output torque of the fluid drive is derived and in subsequent conjunction with an electric signal having voltage or current in magnitude proportional to vehicle speed effects control of valves which actuate the gear shifting mechanisms. The programming of the computer is on the basis of an equation such that comparative input and output speeds of fluid torque converters or couplings, in the form of proportional electrical magnitudes, is processed by the computer to an electrical output signal proportional to output torque of the converter or coupling.



3,710,648
AUTOMATIC TRANSMISSION

Masaharu Sumiyoshi, Toyota; Shigeru Sakakibara, Aichi; Osamu Ito, Toyota, and Hisato Wakamatsu, Kariya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi and Nippondenso Kabushiki Kaisha, Aichi-ken, Japan

Filed June 16, 1970, Ser. No. 46,589
Claims priority, application Japan, June 24, 1969, 44/49796
Int. Cl. F16h 47/08, 5/42
U.S. Cl. 74—731 12 Claims

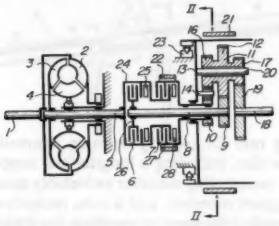


An automatic transmission comprising a transmission means having a torque converter and a gear transmission mechanism of at least two stages; electrical means for generating a shifting signal in accordance with the engine speed, the vehicle speed and the torque converter slip ratio; and hydraulic means operated in accordance with said shifting signal of said electrical means for selecting either of the two stages of said gear transmission mechanism.

3,710,649
HYDRAULIC CONTROL DEVICE FOR AUTOMATIC TRANSMISSION

Seitoku Kubo, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Feb. 2, 1971, Ser. No. 111,978
Claims priority, application Japan, Feb. 3, 1970, 45/9479
Int. Cl. F16h *3/44, 5/42;* B60k *21/00*
U.S. Cl. 74—753 2 Claims

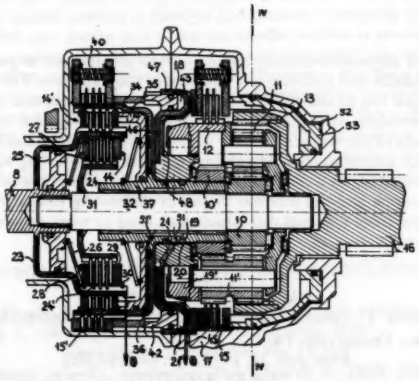


A hydraulic pressure control device is provided for an automatic transmission including a hydraulic torque-converter or fluid coupling, a change speed gearing, a hydraulic servo for brake bands, clutches and the like. A relay valve is added to a pressure regulator valve for controlling the hydraulic pressure applied to the servo, and in response to the actuation of an automatic shift valve an oil line to the servo is communicated with a pressure control chamber in the pressure regulator valve so that the pressure regulating function of the pressure regulator valve may be varied depending upon the position of a manual valve and also depending upon the actuation of the automatic shift valve. The hydraulic circuit may be simplified.

3,710,650
PLANETARY GEAR-CHANGE-SPEED TRANSMISSION MECHANISMS

Jean Piret, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France

Filed Feb. 1, 1971, Ser. No. 111,225
Claims priority, application France, Feb. 4, 1970, 7003902
Int. Cl. F16h *57/10;* F16d *25/08*
U.S. Cl. 74—763 8 Claims

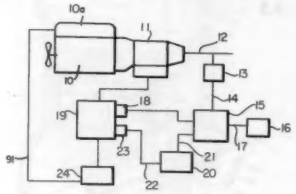


Planetary-gear train transmission mechanism for automotive vehicles; this mechanism comprises a casing enclosing devices controlled hydraulically by piston means, a bearing in said casing, and a pair of annular fluid-receiving chambers adapted to be fed separately with hydraulic control fluid under pressure, the outer diameter of said chambers being substantially equal to the outer diameter of the locking devices of the planet-gear carrier and sun gear of the planetary-gear train, and the walls of said chambers constituting said bearing.

3,710,651
LINE PRESSURE REGULATING SYSTEM FOR AUTOMATIC POWER TRANSMISSION

Nagayuki Marumo, and Namio Irie, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed March 8, 1971, Ser. No. 121,776
Claims priority, application Japan, March 18, 1970, 45/22483
Int. Cl. B60k *21/00*
U.S. Cl. 74—864 5 Claims

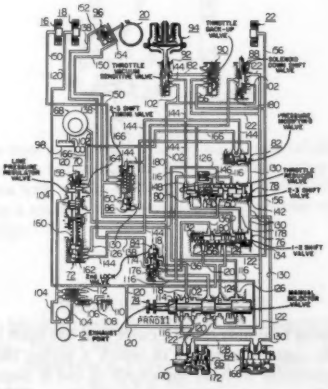


A system for regulating a line pressure in a hydraulic control circuit for an automatic power transmission that is capable of reducing the line pressure to a sufficiently low level to prevent shift shock at the time of gear shifting. When gear shifting is to be effected, a gear shift command signal is supplied to an electronic line pressure control circuit including a monostable multivibrator to keep the multivibrator in a metastable state for a predetermined period of time. During the time period the electronic line pressure control circuit generates a line pressure reduction signal which is supplied to a pressure regulating valve arrangement, thereby reducing the line pressure to the sufficiently low level. The line pressure is normally maintained at a sufficiently high level to prevent slippage of the friction-drive-establishing devices of the automatic power transmission.

3,710,652
HYDRAULIC CONTROL SYSTEM OF AUTOMATIC TRANSMISSION

Toshio Miyazaki, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed May 25, 1970, Ser. No. 40,276
Claims priority, application Japan, May 30, 1969, 44/41647
Int. Cl. B60k *21/00*
U.S. Cl. 74—864 4 Claims



A hydraulic control system of automatic transmission providing low, intermediate and high speed drive ratios, which

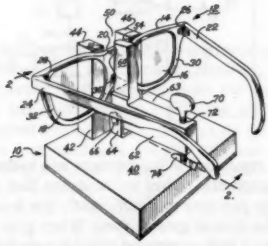
control system has shift valve means for automatically controlling ratio changes between the low and intermediate speed ratios and second lock valve means for conditioning the transmission in its intermediate speed position. The two valve means are separately provided between a fluid pressure operated servo means for a clutch engaging element and a speed selector valve for varying the drive ratios.

3,710,653

EYEGLASS FRAME ALIGNMENT DEVICE

Bernard H. Miller, 141 North Dickson Street, Michigan City, Ind.

Filed April 14, 1971, Ser. No. 133,984
Int. Cl. B25b *11/00*
U.S. Cl. 81—3.5 **7 Claims**



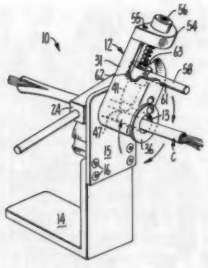
An eyeglass frame alignment device having two vertical posts mounted on a base forming a space therebetween and a third post connected pivotally to the base and rigidly to a lever. A screw in the lever tilts the third post angularly toward and away from the vertical posts to clamp the eyeglasses between the pair of posts and the third post to apply firm pressure against the front member and bridge of the glasses and to hold the glasses firmly in place for a period of time to realign the front member and to obtain a relatively permanent set in the realignment.

3,710,654

CABLE STRIPPING TOOL

Paul G. Halverson, Concord, and Anthony J. Iozzi, Martinez, both of Calif., assignors to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Sept. 4, 1970, Ser. No. 69,775
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.5 R **8 Claims**



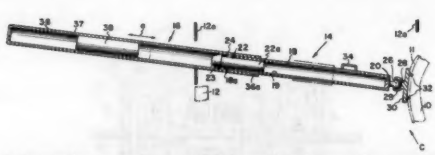
A clamping assembly holds a cable that has been inserted in a rotatable cutting assembly in which a spring biased knife having a shoulder to limit the depth of cut is disposed. The blade can be rotated to either of two positions, 90° from each other, so as to effect either a circular or a longitudinal cut on the cable jacket.

3,710,655

BATTERING APPARATUS FOR OPENING JAMMED AUTOMOBILE DOORS

Marvin M. Brandle, 318 Holbrook, Saginaw, Mich.

Filed May 17, 1971, Ser. No. 144,138
Int. Cl. B25b *19/00*
U.S. Cl. 81—52.35 **6 Claims**



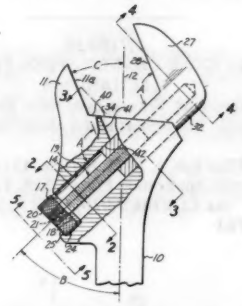
A battering ram for quickly opening jammed automobile doors, and the like, including a longitudinal support member, an upholstery penetrating member swivelably mounted on one end of the support member, and a ram, reciprocally movable on the other end of the support member, for striking the other end of the support member a series of sharp blows to drive the support member into battering engagement with the interior of the jammed door to open it outwardly.

3,710,656

ADJUSTABLE WRENCH

Burton L. Casner, P.O. Box 817, Perris, Calif.

Filed June 16, 1971, Ser. No. 153,729
Int. Cl. B25b *13/16*
U.S. Cl. 81—170 **9 Claims**



An adjustable wrench having a fixed jaw formed as part of its handle and a sliding jaw opposed to the fixed jaw. The sliding jaw has an internal thread which is entirely enclosed to accommodate an adjusting screw with a knob external to the handle of the wrench for easy accessibility. The elliptical bore, which accommodates the sliding jaw and the adjusting screw, is closed off by a dust seal, and all threads, both of the adjusting screw and the internal thread of the sliding jaw, are protected from external dirt which may tend to wear or jam the threads.

3,710,657

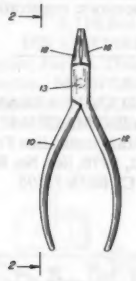
PARALLEL JAW PLIERS

Anthony J. Cusato, Closter, N.J., assignor to Henry Mann, Inc., Feasterville, Pa.

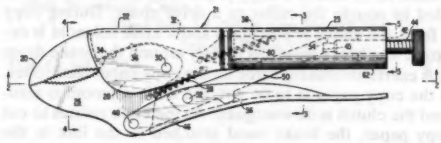
Filed July 22, 1971, Ser. No. 165,022
Int. Cl. B25b *7/12*
U.S. Cl. 81—352 **11 Claims**

The parallel jaw pliers of this invention are primarily for use in dentistry and particularly in orthodontics. The pliers provide a compact structure permitting the jaws to be moved in a parallel manner while occupying a minimum space such as in the mouth of a patient. The pliers consist of only four major members retained by a transverse pin which maintains the

members in sliding alignment while acting as a pivot for only the handles. The jaws are carried between the handle members and on and by actuating pins extending from the handle members. As the pins are moved they maintain the jaws in a parallel arrangement as the handle members are moved.



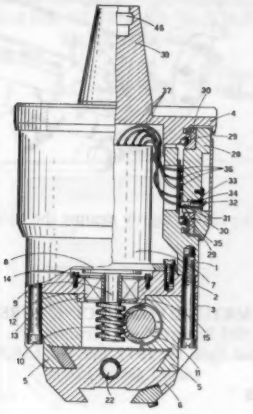
3,710,658
SELF-ADJUSTING WRENCH
Neill R. Wilson, P.O. Box 538, Berryville, Va.
Continuation-in-part of Ser. No. 62,093, Aug. 7, 1970, abandoned. This application Aug. 6, 1971, Ser. No. 169,744
Int. Cl. B25b *7/12*
U.S. Cl. 81—367 **10 Claims**



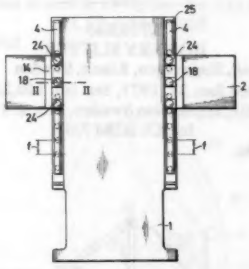
A self-adjusting locking wrench having a first jaw means and second jaw means movably connected thereto. A first elongated handle portion is fixed to and extends rearwardly from the first jaw means and a second handle portion is pivotally connected to the second jaw means. An elongated cam bar is slidably mounted within the first handle portion and has a forward cam surface for locking engagement with a portion of the second jaw means. A link extends between the second handle portion and the rear part of the cam bar to force the cam bar rearwardly as an object is gripped. As a result, the forward cam surface is wedged against the second jaw means and the wrench is grippingly locked on the object.

3,710,659
AUTOMATICALLY CONTROLLED TOOL HOLDING DEVICE
Elio Pagella, and Carlo Guerci, both of Ivrea, Italy, assignors to Ing. C. Olivetti & C. S. p. A., Ivrea (Turin), Italy
Filed March 2, 1970, Ser. No. 15,390
Claims priority, application Italy, March 4, 1969, 50834 A/69
Int. Cl. B23b *41/00*
U.S. Cl. 82—1.2 **14 Claims**

A tool holding device wherein the tool is slideably supported in the holder in order to enable a radial motion with respect to the axis of rotation of the holding device to be described. Control of the holder is effected by a control circuit which rapidly positions the tool for commencement of the machining operation and then controls the tool more slowly during the machining operation. A step motor is used as the motion source and is controlled directly by the control circuit.



3,710,660
MACHINE TOOL
Rainer Hof, Niederfischbach, Germany, assignor to Arn Jung Lokomotivfabrik GmbH
Filed July 16, 1970, Ser. No. 55,549
Claims priority, application Germany, July 17, 1969, P 19 36 329.2
Int. Cl. B23b *3/20*
U.S. Cl. 82—2 D **5 Claims**

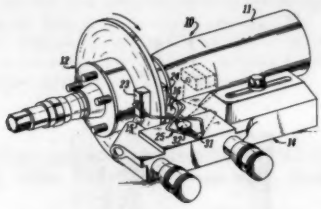


Machine tool and method of shifting a base of the tool for adjustment in a perpendicular direction having stop strips on guide plates with a stop bolt for vertical adjustment with the bolt having a smaller diameter than the diameter of bores in the stop strips.

3,710,661
VIBRATION DAMPENER
Wallace F. Mitchell, Arlington Heights, Ill., assignor to Ammco Tools, Inc., North Chicago, Ill.
Filed May 3, 1971, Ser. No. 139,394
Int. Cl. B23b *25/00*
U.S. Cl. 82—38 A **5 Claims**

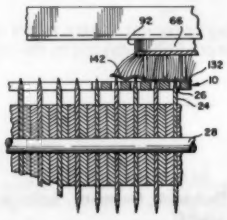
A device for dampening vibrations in a rotating disc during a machining operation on the faces thereof employs a pair of

blocks having friction surfaces pressed against the faces of the



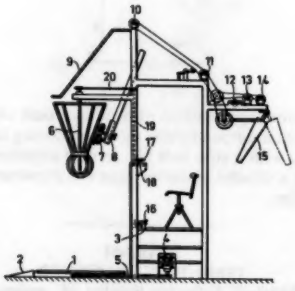
disc so as to be pressed tightly against the tool pieces by the rotating disc.

3,710,662
METHOD FOR SLICING FURS
Fred L. Olday, 505 Bogart Place, Scranton, Pa.
Filed April 29, 1971, Ser. No. 138,536
Int. Cl. C14b *15/10*
U.S. Cl. 83—20 **8 Claims**



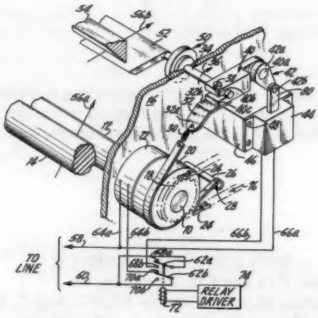
A fur pelt slicing method and apparatus in which a pelt, held against a feed table surface by a bank of pins, is fed through a series of slitting knives rotating in the direction of pelt feed so that preselected portions of the pelt are left uncut. Also, the disclosure includes an out-feed table discharge portion by which transfer of the slit pelt to a retaining board is facilitated.

3,710,663
HOSIERY SLITTER
Christer Ekelund, Hagavagen, Kinna, Sweden
Filed Jan. 27, 1971, Ser. No. 110,228
Claims priority, application Sweden, Feb. 2, 1970, 1285/70
Int. Cl. B26d *7/08*
U.S. Cl. 83—156 **8 Claims**



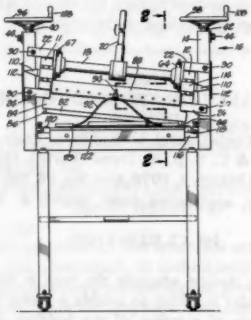
A slitter for slitting woven or knitted textile hose having a marking therealong comprises a rotatable generally conical hose opener disposed apex-downwards above a rotatable container platform for a container from which the hose is drawn upwards onto the opener to be slit, while opened (but not stretched) thereon, by an adjustable severing device adjacent the opener, platform control means being provided for controlling the orientation of the container platform and container so as to achieve rough alignment of the marking with the severing device as the hose approaches the opener, and opener control means for controlling the orientation of the opener so as to ensure accurate registration of the marking with the severing device.

3,710,664
CLUTCH, BRAKE AND KNIFE ARRANGEMENT FOR COPYING MACHINE
James A. Eveland, 1570-8th Avenue, San Francisco, Calif.
Filed Nov. 12, 1970, Ser. No. 88,812
Int. Cl. B65h *35/06*
U.S. Cl. 83—230 **14 Claims**



A clutch, brake and knife arrangement for the copy paper transport system of a copying machine. A link in the knife assembly is attached to a brake band wrapped around a brake drum fixed to an end of a copy paper feed roller. A clutch is provided to couple the roller to a drive chain. During copy paper feed, the clutch is energized and a knife solenoid is de-energized. The brake band sits loosely around the brake drum and thus exerts no braking force on the copy paper feed roller. When the copy paper is to be cut, the knife solenoid is actuated and the clutch is de-energized. As the knife rotates to cut the copy paper, the brake band attached to the link in the knife assembly is tightened around the brake drum of the copy paper feed roller. This causes the roller to come to an abrupt halt before the cut is made.

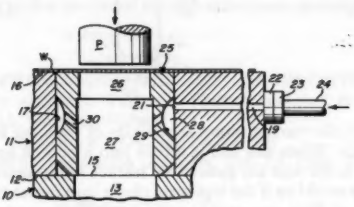
3,710,665
SHEET-METAL SHEARING MACHINE
George D. Eddy, 2505 North Pine Street, Rosemead, Calif.
Filed March 26, 1971, Ser. No. 128,236
Int. Cl. B26d *5/10*
U.S. Cl. 83—374 **9 Claims**



A sheet-metal machine adaptable for use as shears, or for bending sheet metal, or as a punch press. The machine utilizes

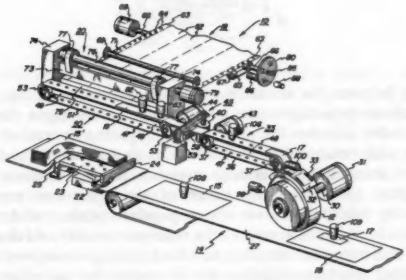
a pair of floating heads with an adjustable cam in each head. The floating heads are interconnected by a drive shaft and can be adjusted so that the cutting blade can be used either for right or left shearing.

3,710,666
DIE ASSEMBLIES
Karl A. Keyes, Dayton; Park A. Doing, Centerville, and Edwin P. Watkins, Dayton, all of Ohio, assignors to Dayton Progress Corporation, Dayton, Ohio
Filed Nov. 23, 1970, Ser. No. 91,887
Int. Cl. B26d 7/18
U.S. Cl. 83—99 17 Claims



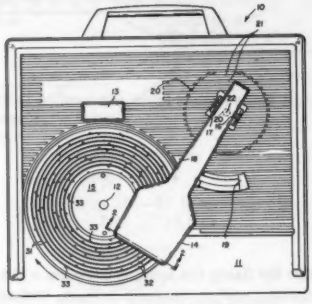
A unique die button and die plate providing an improved die unit utilizing a pressured flow of air to more effectively cleanse the working area of a die assembly. Inclined air-flow passages are provided such that they extend through the die button wall in a direction to produce a whirlpool effect to move cut material through the die bore.

3,710,667
LABELING MACHINE
Jacob N. Kluger, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 14, 1970, Ser. No. 97,756
Int. Cl. B26d 5/40
U.S. Cl. 83—203 6 Claims



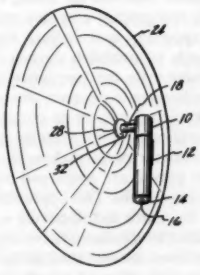
An asynchronous article addressing or labeling apparatus having independently operated component parts each operated in response to a demand signal. The apparatus includes a first transport operable to advance a sheet of uncut labels to a first knife, the first knife serving following a predetermined label sheet advance to cut the sheet transversely to provide a strip-like piece; a first label conveyor to advance the strip-like piece to a second knife which, following an advance equal to one label length, serves to cut an individual label from the strip-like piece; and a second label conveyor to carry the cut label to the label transfer wheel for transfer to an article. The label transfer wheel is operated in response to movement of an article to be labeled into predetermined position to actuate the label transfer wheel and label the article.

3,710,668
MUSIC BOX RECORD PLAYER
David P. Van Sice, and Paul A. Martin, both of East Aurora, N.Y., assignors to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 24, 1972, Ser. No. 228,874
Int. Cl. G10f 1/06
U.S. Cl. 84—98 10 Claims



A music box record player rotates a disk with projections that engage starwheels that play a music unit, but instead of the music unit being mounted on a fixed sounding board, it is mounted on a movable tone arm over the disk. The disk has bearing tracks, and the music unit has surfaces that ride directly on the bearing tracks to support the music unit and the tone arm over the disk. An arm extends from the base of the music unit and transmits vibrations from the music unit to a speaker to sound a tune as the disk rotates.

3,710,669
CYMBAL SPINNER
Russell Jones, 927 Stocker, Flint, Mich.
Filed March 8, 1972, Ser. No. 232,697
Int. Cl. G01d 13/08
U.S. Cl. 84—402 4 Claims

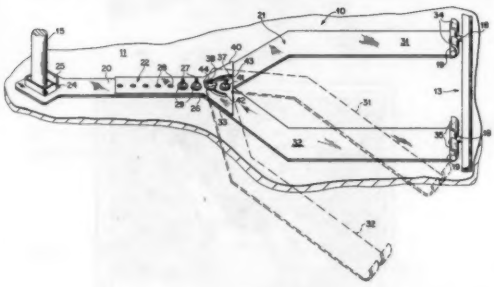


A manually operated cymbal spinner is provided with a handle, an arm fixed to and extending generally radially outwardly from the handle, means mounted at the outer end of the arm for fixedly securing the cymbal to the arm, and a rotatable sleeve mounted on the handle; the sleeve to be held by an operator when the cymbal is being spun. In a preferred embodiment the arm is fixed near the top of the handle and extends outwardly at a downwardly extending obtuse angle slightly greater than 90°.

3,710,670
DRUM ANCHOR

Tommy H. Winkler, 204 Wiley Street, Madison, Tenn.

Filed March 13, 1972, Ser. No. 233,976
Int. Cl. G10d 13/02
U.S. Cl. 84—421 10 Claims

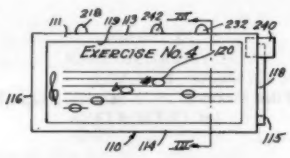


A device for fixing the spacing between a stool and a musical instrument, and particularly a drum, including a stool attachment member and an instrument attachment member, each of the attachment members being connected at their free ends to a bridge member for longitudinal and for swinging adjustment relative to each other.

3,710,671
NOTE AND PITCH TEACHING MACHINE

John E. Reid, Sr., Mundelein, and Russell N. Muehleman, Mount Prospect, both of Ill., assignors to John E. Reid, Sr., Mundelein, Ill.

Filed Dec. 17, 1971, Ser. No. 209,198
Int. Cl. G09b 15/02
U.S. Cl. 84—477 R 15 Claims



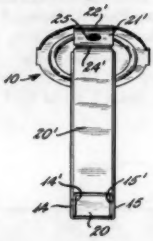
A programmable machine for aiding in the development of note and pitch recognition employs encoded exercise cards carrying corresponding note indicia thereon and means for reading the cards to establish corresponding tuned circuits capable of passing only the frequency of a selected note for operating a mechanism to advance the card reading means. A circuit for indicating the exercise completion and a timer for permitting operation of the exercise completion circuit in response to favorable performance by the student within a prescribed time period are employed to produce a record of the student's achievement. This apparatus may be extended by dual coding of the cards to selectively establish oscillator circuit configurations in apparatus for tuning instruments and advantageously utilized in combination therewith to provide the student with an indication of whether he is playing a note sharp or flat.

3,710,672
HOLLOW SHEET METAL NAIL

Robert L. Hallock, 7136 N.E. 8th Drive, Boca Raton, Fla.

Filed May 25, 1971, Ser. No. 146,706
Int. Cl. E01b 9/12; F16b 15/04
U.S. Cl. 85—11 6 Claims

A sheet metal nail has a head and two channel shaped legs connected at one end to the head portion and terminating in penetrating ends. The legs have longitudinally straight parallel outer sides and a curved intermediate side portion with the straight sides of one received substantially their full width within the straight sides of the other, and with the opposed curved sides being separated at their head end and at their penetrating end substantially the same distance apart and in

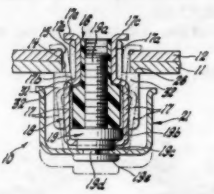


which the curved intermediate side of each leg is curved inwardly. When this nail is driven into a poured aggregate, no void is left near the penetrated surface of the aggregate which there would be if the legs were closer together at the head end than at their penetrating end, thereby eliminating an initial yield as well as offering greater resistance to the withdrawal of the nail.

3,710,673
FASTENERS

Lloyd T. Fuqua, Fortville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 23, 1971, Ser. No. 173,872
Int. Cl. F16b 13/04
U.S. Cl. 85—75 5 Claims



A fastener for securing together two adjacent apertured members in juxtaposition to each other including a threaded expander member for insertion through the apertured members with retainer means thereon to engage one of the apertured members, a retainer member having resilient arms adapted to engage the other of the apertured members slidably telescoped over the expander member and, screw means loosely connected to the retainer member and threaded into the expander member to effect sliding movement of the retainer member relative to the expander member upon threaded axial movement of the screw means in the expander member to expand and retract the resilient arms of the retainer member into and out of engagement with the other apertured member.

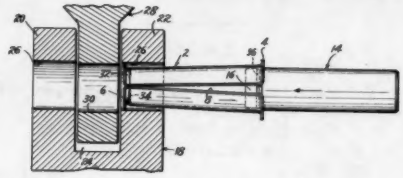
3,710,674
EXPANDABLE FASTENER

Paul C. Tabor, Clawson, Mich., assignor to Meteor Research Limited, Roseville, Mich.

Filed Dec. 18, 1970, Ser. No. 99,494
Int. Cl. B25g 3/38; F16b 13/06; F16c 11/04
U.S. Cl. 85—84 5 Claims

A split, conically tapered spring steel sleeve to be inserted through aligned openings in adjacent members. A cylindrical pin is then pushed through the sleeve, which is held against axial movement by a flange at one end thereof, to expand the

sleeve to cylindrical shape tightly fitting the openings. Detent



means prevent inadvertent removal of the pin and an expendable pilot plug guides the sleeve through misaligned openings.

3,710,675

AIMING ARRANGEMENT FOR GRENADE THROWERS

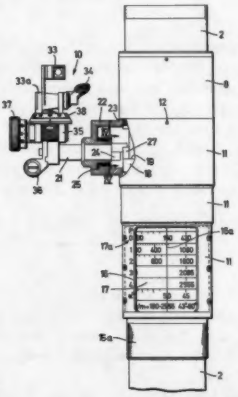
Niilo Kalervo Asikainen, Tampere, Finland, assignor to Oy Tampella Ab, Tampere, Finland

Filed Dec. 8, 1970, Ser. No. 96,060

Claims priority, application Germany, Dec. 12, 1969, P 19 62 339.3

Int. Cl. F41g *3/14*

U.S. Cl. 89—41 B **17 Claims**



A device for automatically setting the elevation angle of the aiming attachment of a grenade launcher in response to adjusting the range scale to the desired range. The range scale is on the surface of a casing mounted on the launcher tube for rotation adjustment. A sleeve extends over the scale indicia to protect the indicia and has a viewing window with a hairline to permit accurate adjustment of the range scale casing. A cam at the end face of the casing cooperates with a follower on the support shaft of the aiming device to adjust the angular setting of the aiming device in response to setting the range scale. The range scale casing is rotatably supported by a clamp sleeve which connects the bipod to the upper end of the launcher tube. With the aiming device angle preset by adjusting the range scale, it is a simple matter to adjust the bipod to position the launcher tube at an elevation angle to fire a projectile the required range.

3,710,676

SELF-DRILLING AND THREAD-FORMING SCREW

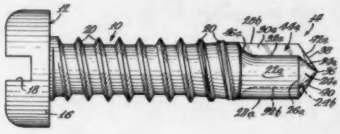
Kenneth D. Ringland, Keene, N.H., assignor to Central Screw Company

Continuation-in-part of Ser. No. 882,634, Dec. 5, 1969, abandoned. This application Nov. 18, 1971, Ser. No. 200,132

Int. Cl. F16b *25/00*

U.S. Cl. 85—41 **7 Claims**

A fastener of the type having a drilling end followed by a thread forming part to form threads in the drilled hole, and secure itself into the threads thus formed. The drilling portion is of unique formation to provide cutting edges continuous



across the drill end without the usual blank or web area in the center of the fastener.

ERRATUM

For Class 89—41 B see:
Patent No. 3,710,675

3,710,677

ROCKET PROJECTOR MAGAZINES

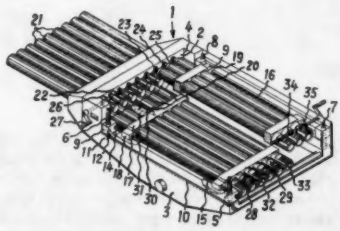
Cornelius Mayer, Fallanden, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle A.G., Zurich, Switzerland

Filed Dec. 18, 1969, Ser. No. 886,151

Claims priority, application Switzerland, Dec. 14, 1968, 18951/68

Int. Cl. F41f *3/04*

U.S. Cl. 89—1.8 **10 Claims**



A rocket projector magazine for rockets having an adjustable time fuze on the nose portion of each rocket. A plurality of loading chamber tubes having each a rocket. Adjusting means for said time fuzes positioned outside the firing trajectory of the rockets. Means for producing a relative movement between the adjusting means and the loading chamber tubes so that the adjusting means engage and adjust the time fuzes of the rockets in the loading chamber tubes.

3,710,678

JETTISONABLE POD FOR AIRCRAFT CARRIED ROCKET MISSILES

Rudolf Abelin, Fack; Nils Soren Lennart Johansson, and Anders Borje Hakansson, both of Linkoping, all of Sweden, assignors to Saab-Scania Aktiebolag, Sweden

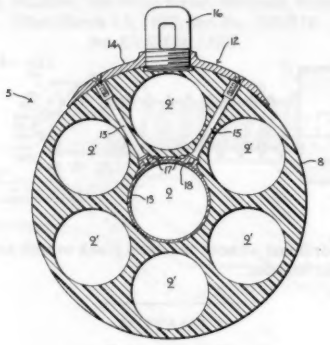
Filed April 21, 1971, Ser. No. 135,897

Int. Cl. F41f *3/06*

U.S. Cl. 89—1.816 **7 Claims**

A pod for aircraft carried rocket missiles has its body molded of foam plastic, with parallel bores therein, each providing a missile chamber. There is a rigid tube in a bore spaced from the top of the body. A rigid wall member closely overlies the top surface of the body along a substantial part of its length; suspension eyes are secured to it. Rods embedded in

the body material connect the tube and wall member to define



a rigid beam that stiffens the body and supports air and mass loads on it.

3,710,679

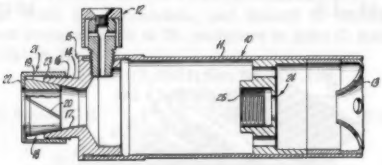
SILENCER FOR MOUNTING ON FIREARM BARREL

Mitchell L. Werbell, III, Powder Springs, Ga., assignor to The Quantum Corporation, Washington, D.C.

Filed Dec. 29, 1970, Ser. No. 102,475

Int. Cl. F41c *21/18*

U.S. Cl. 89—14 D **4 Claims**



A device, particularly a silencer, adapted to be mounted on and in axial alignment with the barrel of a firearm having an externally threaded end, the device mounting on the barrel at one point by means of internal threads in the device which engage the external threads on the barrel and at a second point by means of an annular clamp which compressively engages the barrel.

3,710,680

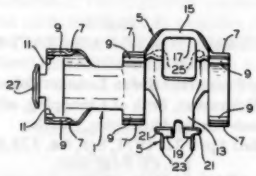
AMMUNITION LINK

Harlan C. Clark, Oxford, Conn., assignor to The United States of America as represented by the Secretary of the Army

Filed May 5, 1970, Ser. No. 34,785

Int. Cl. F42b *39/08*

U.S. Cl. 89—35 A **10 Claims**



An ammunition link having a plurality of clips for engaging and holding a cartridge is provided with hook and eye portions to interengage one link with another link independently of the cartridges thereby to form a belt or chain. The link is also provided with tab means at one end which is coextensive with the electric primer of a cartridge to effectively eliminate or reduce damaging effects incident to a radiation field or to other equipment in the vicinity thereof.

3,710,681

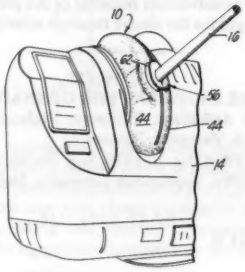
GUN MOUNT CLOSURE OR SEAL

Robert D. Koontz, Manhattan Beach, Calif., assignor to EFMC Corporation, Compton, Calif.

Filed March 30, 1970, Ser. No. 23,858

Int. Cl. F41h *5/26, 5/20*

U.S. Cl. 89—36 L **19 Claims**



A slot or passage in a gun mount through which a moveable gun barrel extends can be sealed against ambient conditions by using a seal structure having a series of spring fingers normally closing the passage and a cam on the gun barrel for moving the fingers as the barrel is moved in the slot or passage. Preferably, two sets of fingers are used, one on each side of the passage or slot. Preferably the fingers employed are covered with an elastomeric material which is impervious to moisture.

3,710,682

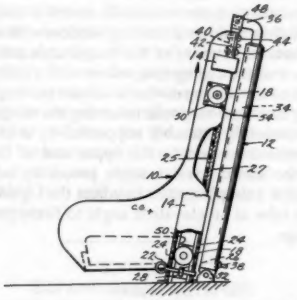
ARMORED EJECTION SEAT

John V. E. Hansen, Westboro, and Eldon W. Hauck, Worcester, both of Mass., assignors to Norton Company, Worcester, Mass.

Filed July 24, 1969, Ser. No. 844,671

Int. Cl. B64d *7/00*; F41h *7/00*

U.S. Cl. 244—122 **5 Claims**

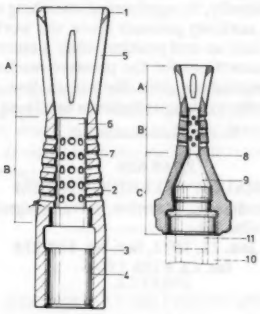


An armored ejection seat structure for aircraft or the like includes a unitary seat and back constructed of a fiber glass resin layer having refractory plates bonded thereto. The structure carries an ejection rocket motor attached to the rear of the seat back by means of a connection which spreads the load imposed during ejection so as to prevent failure of the armor material.

3,710,683
MUZZLE-BRAKE WITH A FLASH HIDER FOR AUTOMATIC WEAPONS AND GUNS

Hans-Joachim Kaltmann, Dusseldorf, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany

Filed Oct. 5, 1970, Ser. No. 77,834
Claims priority, application Germany, Oct. 24, 1969, P 19 53 539.8
Int. Cl. F41c 21/18
U.S. Cl. 89—14 B 3 Claims

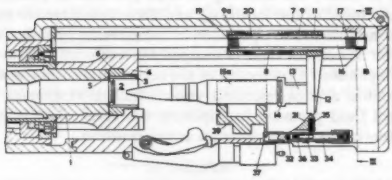


A muzzle-brake with a flash hider for automatic weapons and guns, which comprises an integral device which includes a first section forming a flash hider. The latter comprises a conical sleeve which is widening forwardly. A second section forms a muzzle-brake and follows the first section. The muzzle-brake has a rearwardly increasing outer diameter and a cylindrical bore. The wall of the second section has a plurality of rows of radial bores distributed over the periphery, and the wall of the first section has axial bores which are widening in axial and radial direction.

3,710,684
EXTRACTOR MECHANISMS FOR GUNS

Norman Trevor Brint, Waltham Abbey, Essex, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 9, 1966, Ser. No. 594,312
Int. Cl. F41f 17/16
U.S. Cl. 89—167 11 Claims

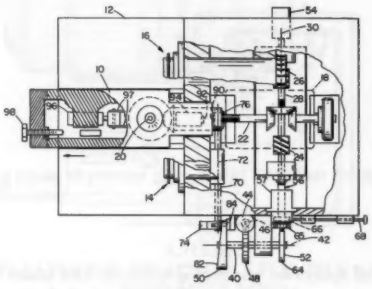


An extractor mechanisms for automatic guns having a sliding breech mechanism, in which an extractor claw carried on a beam extending transversely across the breech face and pivoted on an axis parallel to but offset from the gun axis is moved across the breech face into engagement with the spent cartridge case as the breech opens and recoils with the gun, the extractor thereafter being retained, with the spent case, by a spring catch, as the gun runs out, to effect extraction of the case from the gun.

3,710,685
GEAR MAKING

Alexander D. F. Moncrieff, Marion, Mass., assignor to Bird Island, Inc., Boston, Mass.

Filed July 15, 1971, Ser. No. 162,866
Int. Cl. B23f 5/20
U.S. Cl. 90—3 8 Claims

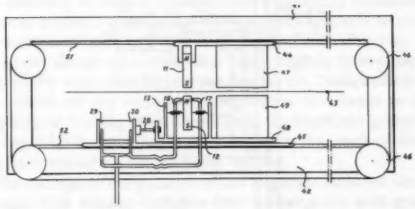


Gear making machine of the type in which a workpiece undergoes continuous indexing rotation with respect to a rotating cutter, the cutter being rotated through a worm, the worm being mounted for translation along its axis to superimpose upon the indexing rotation of the cutter a differential cutter rotation related to the feed of a workpiece slide through a cutting cycle, including a rotationally driven cam mounted endwise of the worm to produce the worm translation in correspondence to the rise or fall of the cam.

3,710,686
DEVICE FOR AN ACCURATE ADJUSTMENT OF TWO APPARATUS PARTS DISPLACEABLE RELATIVELY TO EACH OTHER

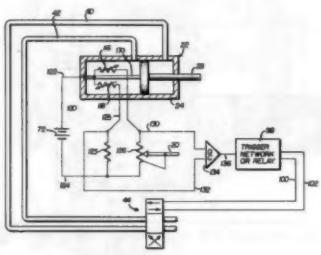
Torgeir Hanaas, Upplands Vasby, Sweden, assignor to Institutet for Mikrovagsteknik, Stockholm, Sweden

Filed April 19, 1971, Ser. No. 135,151
Claims priority, application Sweden, April 29, 1970, 5996/70
Int. Cl. F15b 13/02
U.S. Cl. 91—3 4 Claims



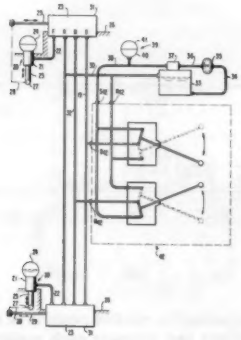
A device for adjusting the relative position of two displaceable members includes two magnets each positional on a different one of the members in such a way that under normal conditions the axes of the magnets are colinear. One of the magnets is pivotable about a point in its axis so that a relative displacement of the magnets induces the one magnet to pivot and energize a servo mechanism to correctively displace the members until the magnets are again colinear.

3,710,687
CONTROL FOR FLUID RAM
Thomas R. Rench, Racine, Wis., assignor to J. I. Case Company, Racine, Wis.
Division of Ser. No. 756,217, Aug. 29, 1968, abandoned. This application Feb. 16, 1971, Ser. No. 115,683
Int. Cl. F15b 9/03, 9/09
U.S. Cl. 91—363 R 6 Claims



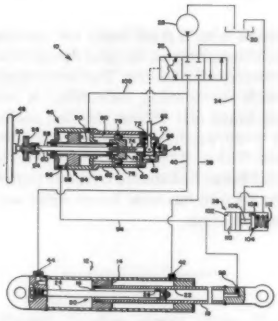
A control system for positioning a remote fluid motor having relatively movable elements. The system includes an electric circuit having a control element producing an output related to the relative position of the movable elements, an adjustable element having an output related to the desired position of the movable elements, and an electric comparing mechanism producing a voltage output which is a combined function of the above outputs and which properly positions a valve to control the flow of fluid to and from the fluid ram. The control includes a cantilever beam within the fluid ram whose deflection is responsive to the position of the piston rod. A variable resistor is connected to the beam having an electrical output related to the position of the piston rod.

3,710,688
CONTROL VALVE, ESPECIALLY FOR LEVEL CONTROL VALVE FOR HYDROPNEUMATIC VEHICLE SPRING SYSTEMS
Klaus Bauer, Stuttgart-Heumaden; Fritz Naumann, Unterensingen, and Hermann Schobbe, Oeffingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed March 27, 1970, Ser. No. 23,428
Claims priority, application Germany, March 29, 1969, P 19 16 238.8
Int. Cl. F15b 9/10, 13/16
U.S. Cl. 91—375 R 46 Claims



A control valve for use in particular with a level control system for hydropneumatic vehicle springs in which the housing is provided with a housing connection for the working pressure medium line leading to the cylinder, with a housing connection for a return line, with a housing connection for a line to be connected with a pressure source and with a further housing connection for an auxiliary force; the valve includes within the valve housing, closure valves as well as a valve-adjusting member whereby the valve-adjusting member and valve housing are so connected with the working cylinder and working piston that the working piston is normally adjusted into a first intended position when the pressure medium source supplies a pressure to the corresponding housing connection; the supply of an auxiliary pressure force to the corresponding housing connection causes the parts to be adjusted to a new position in which a second new desired position of the working piston relative to the working cylinder is established; additionally, by appropriate switching of the pressure medium and auxiliary pressure force, the working piston can be displaced into an end position while a communication of the housing connections for the pressure medium and the auxiliary pressure medium with the return line causes the working spaces in the working cylinder to be closed.

3,710,689
HYDRAULIC STEERING SYSTEM
Donald LeRoy Henderson, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Jan. 25, 1971, Ser. No. 109,218
Int. Cl. F15b 13/16
U.S. Cl. 91—388 7 Claims

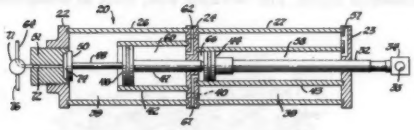


A vehicle includes a steering wheel which is linked to a steering valve for shifting the latter from a neutral position to first and second active positions for causing respective extension and retraction of a two-way steering cylinder. Formed within the steering cylinder is a follow-up cylinder which extends and retracts in unison with the steering cylinder. A two-way slave cylinder is linked to the steering valve and has opposite ends respectively fluidly connected to one end of the steering cylinder and to the follow-up cylinder such that when turning of the steering wheel is stopped, the slave cylinder shifts to return the steering valve to the neutral position. The displacement of the follow-up and slave cylinders are matched to permit full-stroke operation of the steering cylinder. A fixed volume of control fluid is trapped between the follow-up and slave cylinders. Connected in the return line from the steering cylinder is a pilot-operated valve which is responsive to the control fluid pressure for opening the return line only when the steering valve occupies an active position.

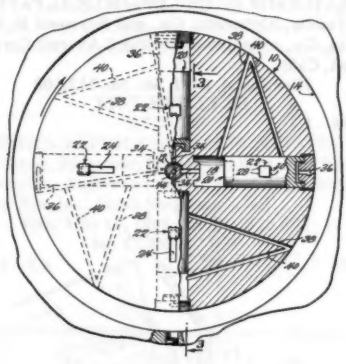
3,710,690
ACCELERATOR
Kenneth R. Dye, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 16, 1970, Ser. No. 89,823
Int. Cl. F15b 11/06; F01b 7/00, 11/02
U.S. Cl. 91—411 A 8 Claims

A pneumatic cylinder and piston actuator for successively accelerating and decelerating a structure to be tested. It includes a reservoir for gas under pressure, an accelerating

cylinder and piston, and a decelerating cylinder and piston, the latter being of smaller diameter but longer stroke than the former. Upon release of a pneumatic pressure hold down, the accelerating piston, actuated by reservoir pressure, accelerates both pistons. Upon termination of the stroke of the accelerating piston the reservoir pressure decelerates the other piston, which is connected to the device to be tested. A non-return device terminates each such cycle, after which the actuator is reset.



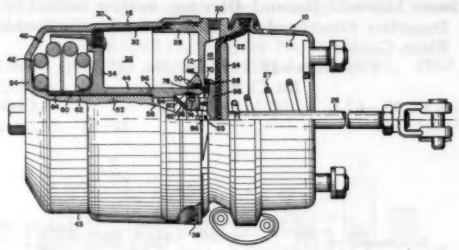
3,710,691
RECIPROCATING PISTON ENGINE
James P. L. Sullivan, P. O. Box 3241, Scottsdale, Ariz.
Filed July 31, 1970, Ser. No. 59,876
Int. Cl. F01b *13/06*
U.S. Cl. 91—496 **5 Claims**



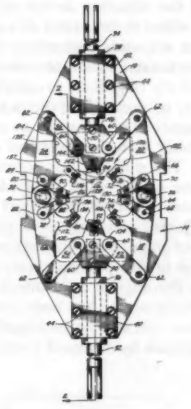
A rotary engine comprises a rotor defining interiorly a plurality of radially disposed cylinders and a reciprocating, fluid-pressure-driven piston in said cylinder. Each piston carries a cross pin extending parallel to the axis of rotation and projecting through a radially elongated slot in the rotor. Rotation of the rotor about its axis is effected by the interaction of the cross pins with one or more fixed elliptical tracks disposed in planes normal to the axis of rotation.

3,710,692
BREATHING SYSTEM FOR SPRING BRAKE ACTUATOR
Harry M. Valentine, Elyria, Ohio, assignor to Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio
Filed April 16, 1971, Ser. No. 134,697
Int. Cl. F01b *7/00*
U.S. Cl. 92—63 **9 Claims**

A combined service and spring brake actuator comprising service and spring brake chambers arranged in tandem and including a breathing system for the spring cavity during actuation of the spring brake actuator, the system including a valve construction for connecting the service chamber with the spring cavity to prevent entry of dirt and other foreign matter into the latter.



3,710,693
APPARATUS FOR ATTACHING A FLEXIBLE BAG TO A CONTAINER BODY
Werner Marhold, Huntington Beach, Calif., assignor to Sterigard Corporation, Santa Ana, Calif.
Filed June 11, 1971, Ser. No. 152,184
Int. Cl. B31b *11/00*
U.S. Cl. 93—36.01 **21 Claims**



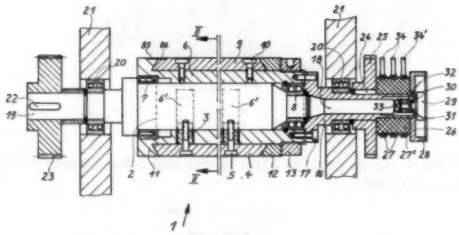
A plurality of fingers contract into a generally elliptical pattern and expand into a generally cylindrical pattern to present to a container body an expanded mouth of a flexible bag. With the upper flange of a container body slightly above the free ends of the expanded fingers the fingers are collapsed close to the outside of the container body below the flange to allow stripping of the bag from the fingers. To facilitate gripping of the bag with limited finger area engagement, each of the fingers has a raised rib for engaging the bag.

The change in the pattern of the fingers is effected through linkage. The linkage includes four rocker arms with pairs of the rocker arms pivotally mounted to a base on diametric opposite sides of an opening in the base. Each of two axially aligned actuator shafts drive two of the rocker arms through drive links. The actuator shafts are at right angles to the plane of the axes of the pivots. A pair of coordinating links for each pair of rocker arms carries one of the fingers. Each rocker arm and each actuator shaft carries a finger. The pivotal connections of the linkage elements is such that the elliptical to cylindrical finger pattern develops when the actuator shafts are pulled away from each other.

3,710,694
ROLLER ADJUSTMENT IN ENVELOPE FOLDING MACHINES

Gunter Ehlscheid, Neuwied, Germany, assignor to Winkler & Dunnebier Maschinenfabrik Und Eisengiesserei, Neuwied, Rhine, Germany

Filed March 18, 1971, Ser. No. 125,712
Int. Cl. B31b *21/00*
U.S. Cl. 93—62 **7 Claims**



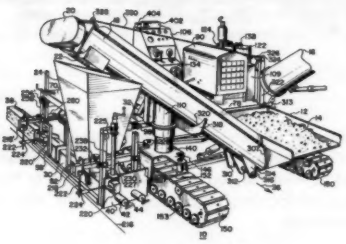
A machine for folding cuts or sheets of paper or the like particularly cuts for envelopes or the like, has an adjustable roller device carrying, for example, a knife for preliminary cutting or a series of suction openings. The roller device can be adjusted in relation to its driving gear wheel to a predetermined angle by a remotely controlled adjusting device. The angularly adjustable part of the roller device is operatively connected with the driving gear wheel in the operative position of the roller device. When this connection is interrupted and the gear wheel stands still the adjusting device adjusts the roller relatively to the gear wheel to the extent of a predetermined angle which is set by an actuating potentiometer. The invention is particularly characterized by the provision of an actual value potentiometer and slip rings fixed to one of the parts which are rotatable relatively to each other, the potentiometer having a ring-shaped resistance. This provides an electrical connection of this potentiometer with the electrical circuit for adjusting the roller device. The slider of this potentiometer is coupled with the other one of the parts rotatable relatively to each other in such manner that when the part of the roller device which is to be adjusted relatively to its gear wheel, is rotated by a predetermined angle, there is a rotation by the same angle between the slides of this potentiometer and its ring-shaped resistance. When the angular adjustment of the roller set by the actuating potentiometer has been completed, the actual value potentiometer will stop automatically the remotely controlled adjusting device by means of a value comparing device known per se.

3,710,695
CONSTRUCTION MACHINE AND CONTROLS THEREFOR

Charles R. Miller; Allen R. Miller, both of McHenry, and David J. Miller, Ringwood, all of Ill., assignors to Miller Formless Co., Inc., McHenry, Ill.

Continuation-in-part of Ser. No. 774,014, Nov. 7, 1968, Pat. No. 3,606,827. This application Jan. 4, 1971, Ser. No. 103,423
Int. Cl. E01c *19/48*
U.S. Cl. 94—46 R **24 Claims**

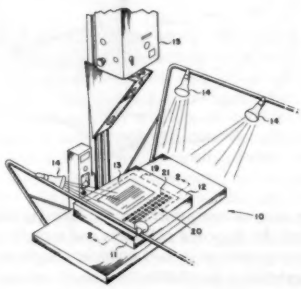
The main frame of the construction machine disclosed is supported upon two pairs of crawler tractors through a five point suspension using four hydraulic rams, two of which cooperate with one pair of tractors and two of which cooperate with the other pair of tractors through a walking beam. Each tractor is individually driven and pivotally mounted from a saddle on a vertical axis. Opposite fore and aft pairs of tractors are connected by a double steering linkage, the geometry of which is modified to increase the steering sensitivity and provide for automatic simultaneous extension and retraction of the dual linkages to accommodate maximum grade and slope deviations without affecting the level of the main frame or working tool. Cross or parallel connected extensible members are also used in the sensor linkages controlling the steering to compensate for and reduce both over- and under correction. The walking beam can be located on a side of the machine longitudinally oriented with the direction of travel or at the front or rear of the machine transverse the direction of travel. The working tool, such as a slip form or mule shoe for curbings, has automatically adjustable skirts to prevent edge slump as it traverses the grade deviations and can be extended or retracted from the side of the main frame to different work locations or relocated at the back of the machine for highway travel and trailering of the machine. The hopper and screw conveyor cooperate in pivoting to and from the work position.



3,710,696
APPARATUS FOR PRODUCING OPTICAL PATTERNS

John R. Tucker, Alpharetta, Ga., and Raymond R. Williams, Marietta, Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Feb. 4, 1971, Ser. No. 112,608
Int. Cl. G03b *17/24*
U.S. Cl. 95—1.1 **7 Claims**

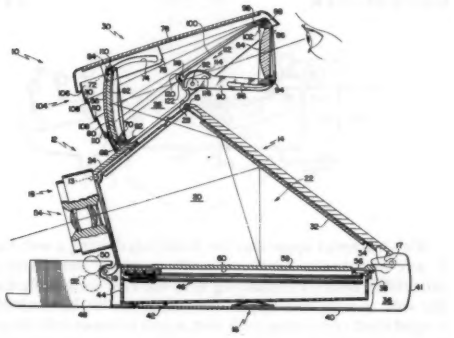


Apparatus for producing optical patterns of digitally encoded information to be photographed along with other information. The patterns of digital data used for frame identification in microfilm photography or for other purposes are provided by means of a coding matrix including a number of lamps individually mounted in recessed chambers beneath a portion of the reflective surface of a front-illuminated supporting member on which the pages of text or other information are received for photographing. The interior of each recessed chamber is nonreflective so that each chamber is photographed as a black area when the corresponding lamp is not illuminated and is photographed as an illuminated area optically indistinguishable from the illuminated background provided by the reflective surface when the lamp is illuminated.

3,710,697
FOLDING CAMERA VIEWFINDER

Richard J. Fraser, 21 Meadow Parkway, Franklin, Mass., and John E. McGrath, Jr., 34 Oakland Street, Dedham, Mass.

Filed Dec. 1, 1971, Ser. No. 203,735
Int. Cl. G03b 11/04
U.S. Cl. 95—47 8 Claims

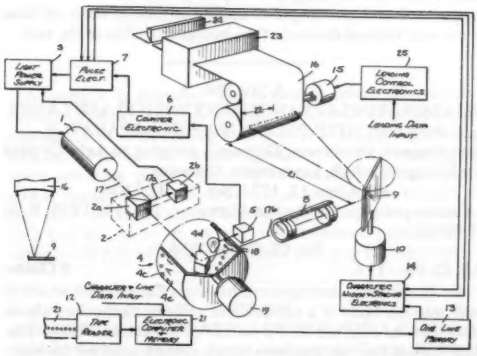


A compact folding camera including a viewing device for framing a scene to be photographed. The viewing device includes first and second optical elements and an erecting system for moving the optical elements from an inoperative position to an operative position. The erecting system includes a latch for releasably retaining the optical elements in the inoperative position. One of the links of the erecting system is responsive to movement of the camera to its operative, extended position for releasing the latch to allow the erecting system to move the optical elements to their operative positions.

3,710,698
PHOTOGRAPHIC COMPOSITION SYSTEM

David J. Sinnott, Ringwood; Donald E. Alecci, Pine Brook, and Louis Kaplan, Englewood Cliffs, all of N.J., assignors to Star-New Era, Inc., South Hackensack, N.J.

Filed May 19, 1969, Ser. No. 825,692
Int. Cl. B41b 21/20
U.S. Cl. 95—4.5 19 Claims

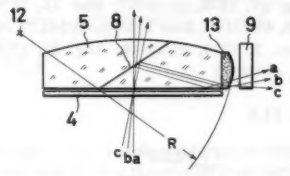


A photographic composition system having a pulsed light source that projects a beam of light through a font of characters to produce an image which is cast by a rotating reflector onto a sheet of film. The controls for activating the rotating mirror are connected to a memory system which receives data input and justifies each line of type that is to be printed.

3,710,699
SINGLE LENS REFLEX CAMERA WITH AN INTERCHANGEABLE FOCUS SCREEN

Taizo Mitani, Yokohama, Japan, assignor to Cannon Kabushiki Kaisha, Tokyo, Japan

Filed April 17, 1970, Ser. No. 29,421
Claims priority, application Japan, April 21, 1967, 44/35776
Int. Cl. G01j 1/00
U.S. Cl. 95—10 PO 14 Claims

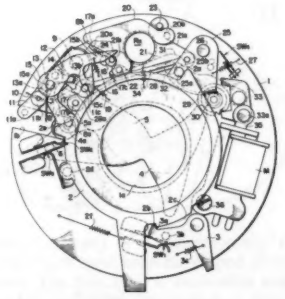


A removeable condenser lens is mounted above the focusing screen in an SLR. The photocell must be mounted a fixed distance away from the condenser so that the condenser can swing to be removed. To compensate for any lost light which would be caused by the distance, a lens modifies to light directed at the photocell.

3,710,700
ELECTRONICALLY CONTROLLED SHUTTER

Chiuriyo Nakano, Yono, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-to, Japan

Filed Aug. 24, 1971, Ser. No. 174,474
Claims priority, application Japan, Aug. 24, 1970, 45/74116; Sept. 25, 1970, 45/95114; Oct. 1, 1970, 45/97784; Oct. 14, 1970, 45/102221
Int. Cl. G03b 7/08, 9/24
U.S. Cl. 95—10 CE 5 Claims



An electronic shutter for photographic camera comprising a shutter blade opening lever coupled directly to shutter blades which serve concurrently as the diaphragm blades, a shutter blade closing lever arranged to directly hit against one of the shutter blades and concurrently for determining the size of opening of the diaphragm aperture, a contact member for a flash luminescing means provided on the shutter blade opening lever, and diaphragm blades for a light-receiving element and arranged to be controlled of their positions starting always from the fully opened positions toward the minimum diaphragm aperture positions whenever the shutter is released. The aforesaid arrangement of the shutter enables the shutter blades to accomplish quick and precise opening and closing movement in accordance with the proper size of opening of the diaphragm aperture and with the proper exposure time which are both determined, in combination, by an automatic exposure control circuit and also enables that perfect synchronism is established always between the luminescing of the flash bulb and the full opening of the shutter blades.

3,710,701
FLASH DEVICE FOR A CAMERA AND A PHOTOGRAPHING SYSTEM WITH AN ARTIFICIAL ILLUMINATOR

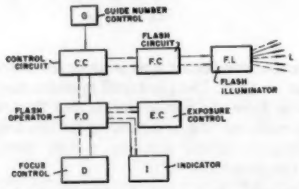
Yoshiyuki Takishima, and Yukio Mashimo, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1970, Ser. No. 100,286

Claims priority, application Japan, Dec. 27, 1969, 45/789; Dec. 27, 1969, 45/790; Jan. 19, 1970, 45/4932; Jan. 19, 1970, 45/4933; March 6, 1970, 45/19583; May 15, 1970, 45/41955; May 18, 1970, 45/42693; June 1, 1970, 45/47330; Jan. 22, 1970, 45/6672; May 19, 1970, 45/49007; May 22, 1970, 45/50369; May 30, 1970, 45/53140; June 1, 1970, 45/54129; June 12, 1970, 45/58284; Oct. 2, 1970, 45/86940; Aug. 24, 1970, 45/84658; Oct. 2, 1970, 45/98262

Int. Cl. G03b 9/70

U.S. Cl. 95—11.5 58 Claims



In the flash device disclosed, the quantity of light emitted by a flash illuminator is varied on the basis of the time integration of a light intensity. A controller varies the operation of the illuminator on the basis of the distance between the camera and the scene being illuminated.

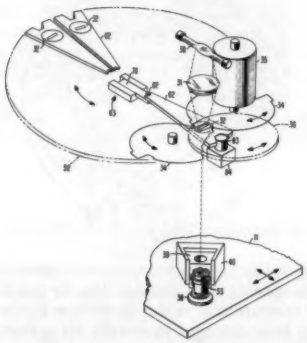
3,710,702
OPTICAL EXPOSURE HEAD

Robert K. Conant, Endicott, N.Y., and William H. Finke, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 1, 1971, Ser. No. 148,353

Int. Cl. G03

U.S. Cl. 95—12 14 Claims



An optical exposure head having a light source, condensing lens and projection lens for tracing a configuration on a photosensitized plate moving at a constant velocity which is provided with a circular disc opening shutter and a circular disc closing shutter mounted for independent rotation in the light path from the light source and condensing lens with each shutter having an identical profile of a constant velocity cam. A plurality of reticles are provided which are indexed to bring a selected reticle in position adjacent the shutters for tracing the configuration thereon. The opening shutter is rotated in synchronism with the moving plate to uncover said configuration for tracing and the closing shutter is rotated in synchronism with the moving plate to cover said configuration and terminate the trace whereby uniform exposure of the configuration being traced is provided.

3,710,703
WEB TRANSPORT APPARATUS

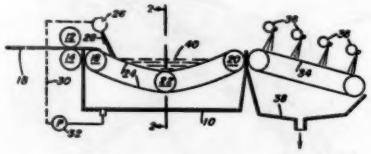
Frederick H. Bruno; Raymond J. Camp, and Thomas H. Farrell, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 863,531, Oct. 3, 1969, Pat. No. 3,630,213.

This application March 18, 1971, Ser. No. 125,840

Int. Cl. G03c 3/12

U.S. Cl. 95—94 R 1 Claim



Web transport apparatus for positively driving a web having a soft and tacky emulsion surface when wet, through a processing bath by contacting only the rear web surface after the web is wet. The apparatus comprises a horizontally arranged fluid containing tank with a pair of input rolls disposed along one side of and above the tank which are arranged to form a nip to drive the web into the tank. A pair of horizontally spaced belt support rolls are horizontally disposed in the tank with the first belt support roll adjacent said input rolls and the second belt support roll being disposed adjacent the side of said tank opposite from the first belt support roll. A horizontal belt idler roll is disposed in the tank between the belt support rolls and has an upper surface disposed below the upper surfaces of the belt support rolls. A web-carrying endless belt member is disposed in the tank and extends substantially across the width thereof in one direction, and around the belt support rolls and the lower surface of the idler roll in the other direction. The belt member has sufficient slack in the length thereof so that the upper span may be depressed below the upper surfaces of the belt support rolls. A first fluid supply is disposed above the first belt support roll and is arranged to apply a curtain of activator fluid to the web on the upper surface of the belt. The belt cooperates with the ends of the tank to form a flow path between at least one edge of the belt and the tank. The flow path is arranged, with respect to the flow from the first fluid supply, to limit the flow from the top of the belt whereby a pool of liquid is formed on the top span of the belt and the weight of the liquid pool depresses the belt into driving engagement with the driven roll. A second fluid supply is disposed above the second belt support roll and is arranged to apply a curtain of wash-off fluid to the web beyond the end of the belt and outside of the tank.

3,710,704
ILLUMINATING ARRANGEMENT WITH FLASH LAMPS FOR USE WITH PHOTOGRAPHIC APPARATUS

Karl Wagner, Ottobrunn, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 12, 1971, Ser. No. 105,826

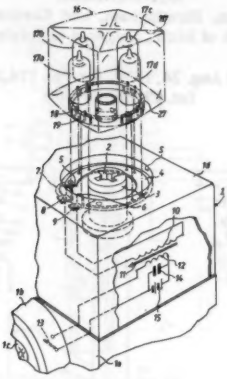
Claims priority, application Germany, Jan. 16, 1970, P 20 01 798.5

Int. Cl. G03b 17/56

U.S. Cl. 95—11 L 6 Claims

An illuminating arrangement having a flash circuit which is built into the body of a camera and utilizing flashcubes whose bases can be inserted into a socket of the camera body. The flash circuit has two contacts which are engaged by the electrodes of a selected flash lamp of that flashcube which is connected with the camera body. An arcuate elastic metallic element short-circuits the electrodes of all such flash lamps which are not in proper position for illumination of a subject or scene. The flash circuit has a normally open synchronizing switch in series with the two contacts and with a source of high voltage, such as a battery and a capacitor connected with a

transformer or a piezoelectric crystal which can be struck by an impeller on closing of the switch to induce a voltage which



is high enough to fire that flash lamp whose electrodes are connected with the contacts of the flash circuit.

3,710,705

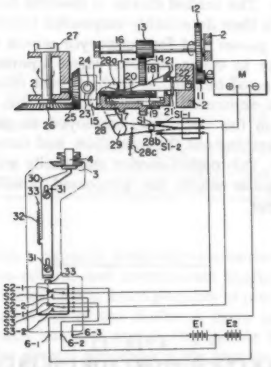
CAMERA WITH A POWER-DRIVEN FILM WINDING DEVICE

Shuji Kimura, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Jan. 24, 1972, Ser. No. 219,951

Int. Cl. G03b *19/00*

U.S. Cl. 95—31 **6 Claims**



A camera is provided with a power-driven film winding device in which a high-voltage circuit is completed upon depression of an operating button so as to supply high voltage to a motor to wind a film at high speed for phototaking; and upon releasing of the operating button, the high-voltage circuit is changed over to a low-voltage circuit so as to wind the film with the aid of low voltage after the phototaking and ensure that the motor stops at a predetermined position where subsequent film winding and shutter charging is completed.

3,710,706

DIAPHRAGM-ACTUATING DEVICE FOR A CAMERA

Noriaki Sanada, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

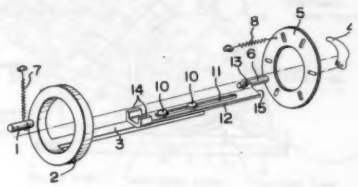
Filed Sept. 16, 1970, Ser. No. 72,633

Claims priority, application Japan, Sept. 27, 1969, 44/91666

Int. Cl. G03b *9/06*

U.S. Cl. 95—64 R **4 Claims**

A diaphragm-actuating interlocking mechanism in an automatic stop device for a camera includes a rotatable ring mounted at the base of a body tube and operatively associated with an operating mechanism provided in a camera body, and an interlocking arm formed integrally with said rotatable ring and engaging an interlocking pin extended from an aperture ring to thereby open and close a diaphragm upon rotation of said rotatable ring. The interlocking arm includes a slide arm



disposed thereon for axial sliding movement with respect to the interlocking arm so that the engagement between the interlocking arm and the interlocking pin takes place via the slide arm, and that the slide arm is axially movable in accordance with the axial movement of the lens tube. Any incorrect stop opening or any time delay of operation can be avoided effectively and the body tube can be made compact.

3,710,707

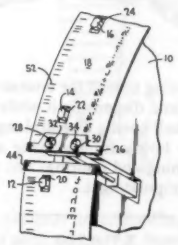
FONT STRIP STRUCTURE

Ellis P. Hanson, Rockport, and George J. H. Sausele, Lynnfield, both of Mass., assignors to Compugraphic Corporation, Wilmington, Mass.

Division of Ser. No. 804,466, March 5, 1969, Pat. No. 3,610,121. This application Sept. 28, 1971, Ser. No. 184,357

Int. Cl. G03b *15/00*

U.S. Cl. 95—85 **5 Claims**



The font strip consists of a dimensionally stable photographic film on which have been developed timing marks and type characters. The font strip is accurately positioned on a rotating drum by guide posts which project through apertures on the font strip. The font strip is secured to the surface of the drum by the engagement of an end plate fastened to one end of the font strip, which end plate projects through pins mounted to the surface of the drum. The other end of the font strip is bent within a hooked end plate which engages a correspondingly tapered hook portion of the font drum. A tensioning mechanism associated with the font drum affords the necessary tension to maintain the font strip on the drum.

3,710,708

EXPOSING AND DEVELOPING APPARATUS

Gordon A. Schuman, Jr., Rolling Meadows; Raymond W. Collins, Schaumburg, both of Ill., and Yukinori Koyama, Tokyo, Japan, assignors to Dietzgen Corporation, Chicago, Ill.

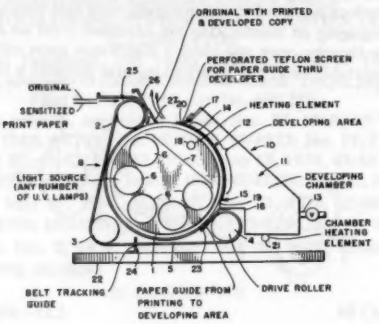
Filed Feb. 19, 1971, Ser. No. 116,897

Int. Cl. G03d *3/12*

U.S. Cl. 95—94 G **3 Claims**

An apparatus wherein a photosensitive sheet material developable by contact with a gaseous developing agent is

placed beneath an image bearing sheet material and the combination first exposed and then developed without separating the two sheet materials.

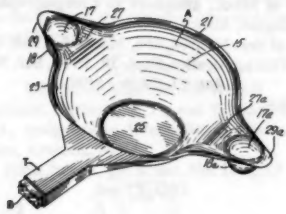


3,710,709

FLAMBE FLAMER

Francesco D. Roncarelli, 51 West Main Street, Mystic, Conn.

Filed Nov. 30, 1970, Ser. No. 93,644
Int. Cl. A47j *36/24*
U.S. Cl. 99—324 **6 Claims**



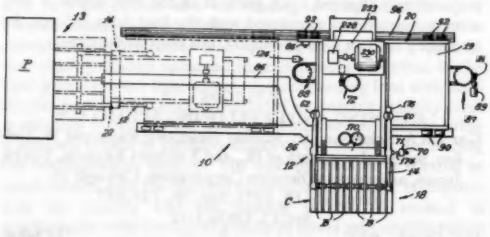
A ladle-like flambeing utensil for containing and flambeing an alcoholic potion and dispensing it while flaming, made up of an open-topped shell having a central supply bowl and connected smaller side bowls for receiving overflow from the supply bowl for priming and pouring. The utensil is provided with a handle for manipulating it.

3,710,710

METHOD FOR TRANSFERRING COTTON BALES

Albert T. Koehler, Monticello; Paul J. Shideler, Logansport, both of Ind., and Linus E. Dohogne, Paragould, Ark., assignors to A. J. Gerrard & Company, Des Plaines, Ill.

Division of Ser. No. 887,963, Dec. 24, 1969, Pat. No. 3,673,950. This application Nov. 3, 1971, Ser. No. 195,524
Int. Cl. B65b *13/02*
U.S. Cl. 100—3 **2 Claims**



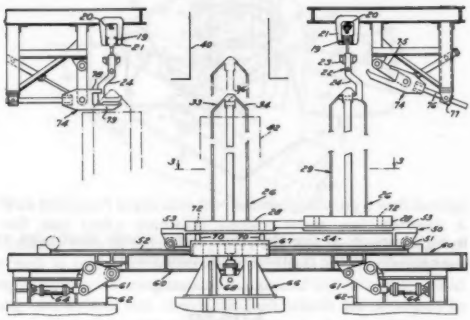
An apparatus for automatically transferring cotton bales from an unbanding station to a press and rebanding station.

3,710,711

SYSTEM FOR FORMING AND HANDLING ANNULAR ROD BUNDLES

Walter G. Boehm, Birmingham, and Gordon A. Torrance, Riverview, both of Mich., assignors to Jervis B. Webb Company

Filed Aug. 24, 1971, Ser. No. 174,318
Int. Cl. B65b *13/00*
U.S. Cl. 100—7 **19 Claims**



Rod delivered in a series of rings to an elevated gathering tub, in a conventional manner, is formed into an annular bundle around a mandrel of a rod bundle carrier having a base platform secured at right angles to the mandrel, the carrier being elevated so that the mandrel projects into the gathering tub as the bundle is formed and loaded onto the base platform of the carrier. The loaded carrier is lowered from the gathering tub, and is then detachably suspended from a load unit of an overhead power and free conveyor which transports the loaded carrier to other stations where operations are performed on the rod bundle. At each of these other stations the bundle is not separated from the carrier but the carrier is detached from the conveyor, employed as part of the apparatus for carrying out the operation, and resuspended from the conveyor, the loaded carrier eventually arriving at at an unloading station where the processed bundle is removed from the carrier.

3,710,712

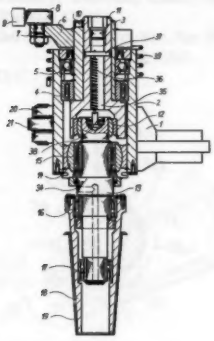
ADJUSTABLE CUP SUPPORT FOR USE IN CONTINUOUS PRINTING ON CONICAL CUPS

Jean Demierre, Freiburg, Switzerland, assignor to Polytype AG, Freiburg, Switzerland

Filed Aug. 24, 1971, Ser. No. 174,413
Claims priority, application Sweden, Sept. 2, 1970, 11951/70
Int. Cl. B41f *17/28*
U.S. Cl. 101—39 **7 Claims**

To assure constant line contact between a conical cup and a printing cylinder during continuous printing operations, a cup carrier is provided which can position the conical cups in continuous tangential contact with the printing cylinder. The cup carrier is mounted on a shaft which extends axially from a bearing head, a plurality of the bearing heads are mounted in angularly spaced relationship with the axis of the printing cylinder. An eccentric bush and an eccentric bolt are rotatably supported within each bearing head and, in turn, support the shaft which mounts the cup carrier. By adjusting the eccentric bush and bolt, the axis of the shaft can be angularly displaced relative to the axis of the bearing head so that a cup positioned on the cup carrier can be placed in proper contact with the printing cylinder. A cam and spring mechanism

are operatively associated with the bearing head to assure constant contact between a cup on the cup carrier and the printing cylinder during the printing operation.

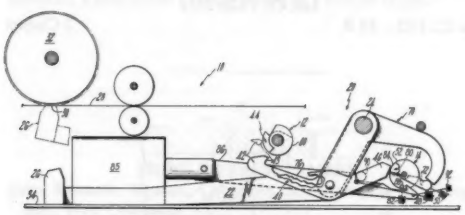


3,710,713

PRINT HAMMER ACTUATING MECHANISM

Howard H. Voegelin, Cheshire, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Sept. 3, 1970, Ser. No. 69,304
Int. Cl. B41j *9/28*, *9/38*
U.S. Cl. 101—93 C **10 Claims**



A printer with a hammer actuating mechanism comprising elongated drive-ratchet and control-cam shafts mounted in spaced parallel relationship and a plurality of pivotal hammers extending transversely of the shafts. A drive pawl pivotally mounted on each hammer arm is engageable by the drive-ratchet shaft for pivotal actuation of the hammer for producing a printout and the control-cam shaft is rotatable for releasing the drive pawls for engagement by the drive-ratchet shaft. A pivotal control arm is operable by an electromagnet for actuation by the drive-ratchet shaft in the manner of the hammer actuation to rotate the control-cam shaft for releasing the drive pawls.

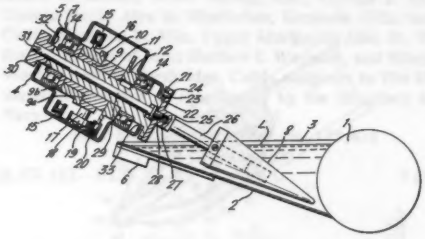
3,710,714

STIRRING APPARATUS FOR CIRCULATING COLOR OR INK IN THE COLOR CHEST OF A PRINTING MACHINE

Eberhard Graupner, Freital, Germany, assignor to VEB Polygraph Leipzig Kombinat f. Polygraphiche Maschinen und Ausrustungen, Leipzig, Germany

Filed Nov. 9, 1970, Ser. No. 87,718
Int. Cl. B41f *31/02*
U.S. Cl. 101—364 **5 Claims**

Agitating apparatus for circulating liquid color material or ink in the color chest of a printing machine. The agitator or top for the color material is carried by a slider which reciprocates, in a direction parallel to the color ductor or ink roller, by means of an endless chain or belt, while the top itself rotates. A new combination of chains or belts, guide members,



and rotor means is provided to insure effective stirring, while using simple driving and guiding apparatus.

3,710,715

VOLUTE SPRING STABILIZER

Wayne E. Hoofnagle, Waterloo, Iowa, assignor to The United States of America as represented by the Secretary of the Army

Filed Nov. 24, 1970, Ser. No. 92,488
Int. Cl. F42b *25/16*
U.S. Cl. 102—4 **5 Claims**

A volute spring stabilizer for controlling the trajectory of an ordnance munition such as a bomb, bomblet or canister, and consists of a flat strip of spring steel wound in a clockspring manner. The wound spring is nested in a cavity formed in the base of the munition, or may be left fully extended. Centrifugal force generated by tumbling or oscillating of the munition will cause the spring to extend to provide a stabilizing tail to enhance the stability of the munition in flight.

3,710,716

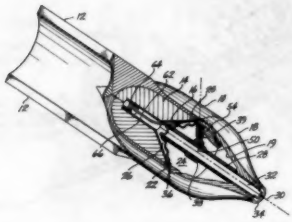
RAM PRESSURE STANDOFF EXTENSION AND SAFE/ARM MECHANISM FOR SELF-ARMING MUNITIONS

Thomas L. Davis, and Joseph D. Hansen, both of Huntsville, Ala., assignors to The Boeing Company, Seattle, Wash.

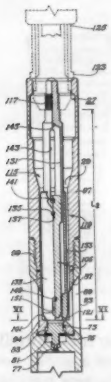
Filed July 28, 1970, Ser. No. 58,807
Int. Cl. F42c *1/14*
U.S. Cl. 102—7.4 **7 Claims**

A munition for flight through a fluid medium environment to a target having an extendible standoff member normally carried within the munition body for efficient packing density, an interior diaphragm responsive to the differential between fluid ram pressure and local low static pressure during flight to extend the standoff member forwardly of the munition body, and a detonator carried by the standoff member into an armed

position wherein it is responsive to the impact of the standoff member with the target to detonate the munition at a predetermined standoff distance from the target.



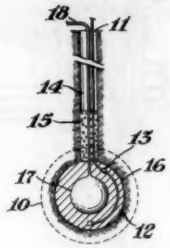
3,710,717
PERCUSSION FIRING SYSTEM
Jack W. Tamplen, Rural Route 2, Celina, Tex.
Filed May 18, 1971, Ser. No. 144,582
Int. Cl. F42b *3/10*; F42c *1/04*
U.S. Cl. 102—20 **36 Claims**



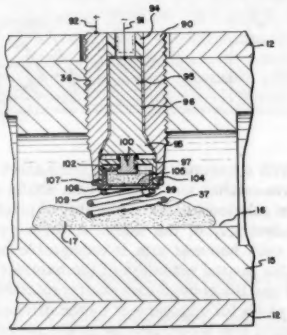
Percussion firing apparatus for firing an explosive charge in a downhole tool by use of a nonelectrical wireline characterized by positive safety features and including a percussion firing head assembly that is set in the well and, on a subsequent trip, a firing pin assembly is emplaced within the firing head assembly to effect firing of the charge; after which the entire percussion firing apparatus is pulled. The positive safety features provided include (1) preventing the emplacement of an armed firing pin assembly within the receiving chamber of the percussion firing head assembly while running or pulling; and (2) allowing only one firing attempt.

3,710,718
METHOD FOR CREATING UNDERGROUND CAVITIES EMPLOYING EXPLOSIVES
Charles H. Grant, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Feb. 4, 1971, Ser. No. 112,704
Int. Cl. F42d *3/00*
U.S. Cl. 102—23 **6 Claims**

Underground cavities are created by explosive springing wherein an explosive load is maintained below its critical amount by displacing a portion of the volume of a treatment cavity with a non-explosive medium.



3,710,719
DETONATOR FOR AN EXPLOSIVELY OPERATED CONNECTOR
Walter Myers Werner, Downingtown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Continuation-in-part of Ser. No. 18,152, March 10, 1970, abandoned. This application Jan. 8, 1971, Ser. No. 104,898
Int. Cl. F42b *3/14*
U.S. Cl. 102—28 R **2 Claims**

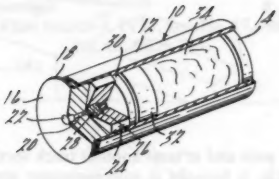


In a connector device for splicing or providing terminal anchoring means for a large diameter electrical cable, the connector including a shell, a firing chamber and, upon firing an explosive charge with a detonator device, securely engages the cable inserted into the connector, the novel combination residing in a detonator threadably secured internally of the connector and provided with a negative electrode and a positive electrode connected together through an insulator cap having an interior transmission stem, with a spring in contact with an explosive charge within the connector additionally contacting both the positive and the negative electrodes of the detonator, the detonator further including a firing cap and a plastic plug carrying a contact rivet engaged with the stem, together with a nichrome wire engaging the spring and a primer retained in a primer holder covered by a thin firing membrane.

3,710,720
HIGH ENERGY MINIMUM LETHALITY WEAPON SYSTEM

Robert C. Mawhinney, Danville, Calif., assignor to MB Associates, San Ramon, Calif.

Filed May 21, 1970, Ser. No. 39,294
Int. Cl. F42b 7/02
U.S. Cl. 102—42 C 11 Claims

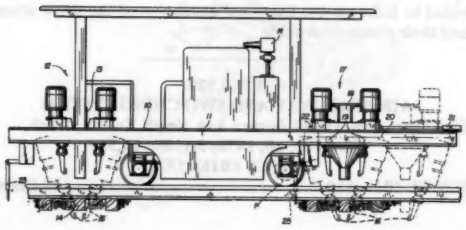


The disclosure relates to a weapon system comprising a launcher and a flexible low lethality projectile of relatively large mass adapted to be radially expanded during trajectory so as to present a relatively large impact surface to the target. The projectile has an initial relatively small cross section so as to be insertable in a conventional launcher. The launcher may have internal rifling grooves within the barrel to effect rotation of the projectile and radial expansion thereof due to centrifugal force. The relatively large area of contact on impact reduces unit area energy and therefore penetration to a minimum while maintaining high inertia energy thereby to accomplish a non-lethal incapacitation of a human target.

3,710,721
MOBILE TRACK TAMPER

John Kenneth Stewart, Columbia, S.C., assignor to Tamper Inc., West Columbia, S.C.

Filed July 8, 1970, Ser. No. 53,076
Int. Cl. E01b 27/16
U.S. Cl. 104—12 1 Claim

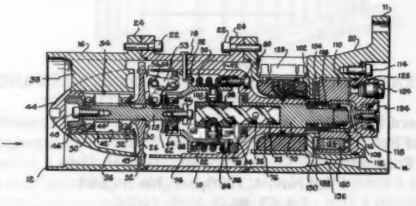


A track tamping machine having a plurality of ballast tamping heads mounted on a carriage thereof. At least one of the tamping machine heads is slidably mounted longitudinally of the carriage and the tamping heads are spaced longitudinally with respect to the track on the carriage. The slidably mounted tamping head is capable of performing a tamping operation whilst the carriage is moving along the track.

3,710,722
FLUID FLOW VELOCITY ACTUATED SAFETY AND ARMING DEVICE

Nicholas L. Demas, Silver Spring, Md.; George J. Fabian, Canoga Park; Alex S. Marderian, Granada Hills, both of Calif.; Sherman L. Min, Upper Marlboro; John M. Wack, Bethesda, both of Md.; Herbert I. Waxman, and Edwin W. Wecker, both of Northridge, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed March 30, 1971, Ser. No. 129,435
Int. Cl. F42c 5/00
U.S. Cl. 102—81.2 7 Claims

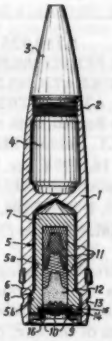


A safety and arming device having rotary electric switches and a detonator rotor contained therein and being adapted to be coupled to a remotely located associated explosive device solely by mild detonating cord. The rotary switches and detonator rotor are mounted for rotational movement on a shaft attached to a bar screw having a nut threaded thereon, the nut being restrained against rotational movement but being movable linearly along the bar screw. Centrifugal weights attached to a rotatable impeller exert a linear force against the nut proportional to fluid flow velocity across the impeller, causing the nut to slide along the bar screw and rotate the switches and detonator rotor to the armed position. A preloaded compression spring acting upon the nut in opposition to the force produced by the centrifugal weights provides velocity discrimination by biasing the nut, rotary switches and arming rotor to the safe position and permitting the rotor and switches to maintain the armed position only in the continued presence of fluid flow above a predetermined magnitude.

3,710,723
TRACER PROJECTILE

Kurt Muller, Dielsdorf, and Silvano Trevisani, Zurich, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed July 24, 1970, Ser. No. 57,978
Claims priority, application Switzerland, Aug. 5, 1969, 11860/69
Int. Cl. F42b 11/16
U.S. Cl. 102—87 3 Claims



A tracer projectile comprising a body having a rearwardly open recess with a pyrotechnic pack in the recess. The shell of

the pack is located with radial clearance inside the recess. There are cooperating annular coned faces on the shell and in the recess. A threaded steel ring is screwed into the recess to the rear of the shell so that the axial thrust of the threaded ring on the shell will cause the pyrotechnic pack to be axially aligned by the cooperation of the annular coned faces. The threaded ring is provided with said radial slots on its side facing the shell.

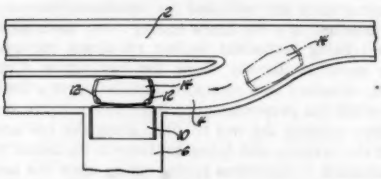
ERRATUM

For Class 104—12 see:
Patent No. 3,710,721

3,710,724
TRANSPORTATION SYSTEM WITH DOCKING AND LANE TRANSFER APPARATUS

Richard H. Donlon, Denver, Colo.; David E. Close, Centerline, and Peter B. Loomis, Birmingham, both of Mich., assignors to Transportation Technology, Inc., Denver, Colo.

Filed Nov. 4, 1970, Ser. No. 86,664
Int. Cl. B61b *1/00, 12/08*
U.S. Cl. 104—31 **17 Claims**



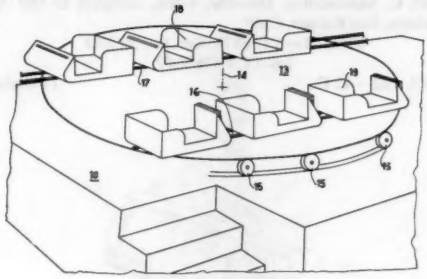
A transportation system including apparatus for docking and lane transfer of air cushion vehicles. A loading platform located alongside a roadway, track or guideway system has a reciprocable docking device located in a compartment beneath the platform which is operable to extend and engage a vehicle traveling along a traffic lane of the guideway system and to subsequently retract and move the vehicle transversely off the traffic lane to a position alongside the loading platform, or to another traffic lane. The vehicle is secured to the docking device by electromagnets. The docking device provides an external power source for the air cushion devices, and for continuous operation of lights, air conditioning and heating system, and other environmental controls and communication equipment of the vehicle during the time that the vehicle is positioned at the loading platform.

3,710,725
APPARATUS FOR PERFORMING EMBARKING AND DISEMBARKING OPERATIONS IN AMUSEMENT PARK ATTRACTIONS

Italo Pinfari, and Pino Begotti, both of Suzzara, Italy, assignors to F.LLI Pinfari S.r.1., Suzzara Mantova, Italy

Filed Jan. 18, 1971, Ser. No. 107,155
Claims priority, application Italy, July 15, 1970, 27448/70; Germany, Dec. 1, 1970, P 20 59 104.2
Int. Cl. B60s *13/02*
U.S. Cl. 104—35 **2 Claims**

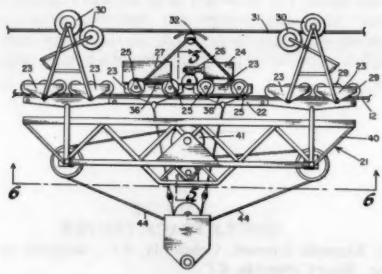
Apparatus for performing passenger embarking and disembarking operations in fair or amusement park attractions wherein vehicles are driven to cover a predetermined path as defined by track means or the like, means for comprising carrying-out said passenger embarking and disembarking operations on a vehicle lying on a track section which is positioned outside said path, while at least another vehicle is covering the path. At the end of said operations said track section is connected to the path and at least another track section, carrying another vehicle, is brought in said passenger embarking and disembarking position.



3,710,726
CABLEWAY

Hugh L. Buchholz, Rt. 3, Box 154-A, Centralia, Wash., and Jerry L. Hays, Rt. 2, Lebanon, Tenn.

Filed April 27, 1970, Ser. No. 32,282
Int. Cl. B61b *7/18;* **B66c** *21/02*
U.S. Cl. 104—112 **7 Claims**

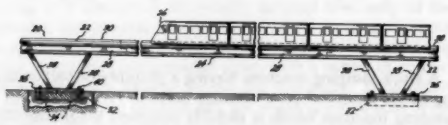


An improved cableway wherein the conventional traveling endless cable is omitted and the trolley, supported upon a pair of laterally spaced elevated cables anchored under tension, is motivated along the cables by driving the trolley support wheels adapted to roll upon the said elevated cables; the wheel rims are shaped to mate with the convolved periphery of the spiral wound elevated cables and magnetic means are provided to increase the frictional attraction of the drive wheels and their companion cable.

3,710,727
AIR BEAM WAY AND SWITCHING SYSTEM

Einar Svensson, 19237 Aurora Ave. North, Seattle, Wash.

Filed Feb. 16, 1970, Ser. No. 11,557
Int. Cl. E01b *25/08*
U.S. Cl. 104—120 **17 Claims**



An air beam structure for a passenger train is described which provides a train support beam having an inverted U-

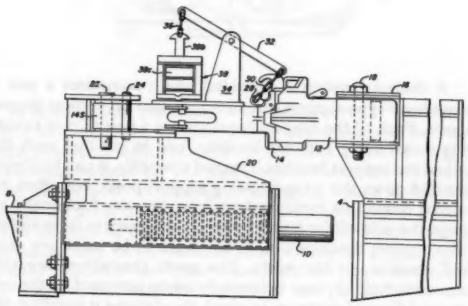
shaped cross section to minimize torsional effects, columnar supports for said beam diverging from an integral base and a stabilizer track centrally mounted on the top surface of the train support beam. The stabilizer track includes a head having stabilizer wheel running surfaces on its undersides, and portions of the stabilizer track are flexible and may be bent between diverging train support beams to allow switching.

3,710,728

OUTDOOR CRANE

Harold O. Levitt, Pittsburgh, Pa., assignor to United States Steel Corporation

Filed March 9, 1970, Ser. No. 17,408
Int. Cl. B61k *7/08*
U.S. Cl. 104—251 **6 Claims**



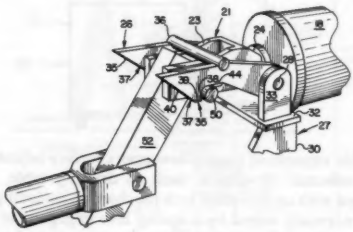
A crane having a bumper at each of its four corners traverses a runway having two bumpers at each end in line with the crane bumpers. Associated with each bumper is a coupler half with the coupler halves on the crane adapted to engage the coupler halves adjacent the bumpers at the ends of the runway. Means are provided on the crane to swing the crane coupler halves out of alignment with the bumper coupler halves during normal crane operation and to swing them back into alignment when it is desired to lock the crane from movement.

3,710,729

VEHICLE HOPPER DOOR OPERATING MECHANISM

James J. Schuller, Dolton, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Jan. 2, 1970, Ser. No. 89
Int. Cl. B61d *7/28*
U.S. Cl. 105—240 **6 Claims**



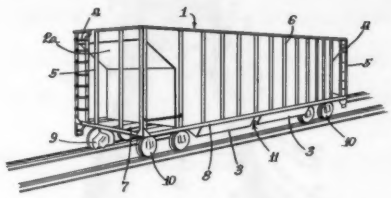
An automatic device for locking and unlocking a hopper car door operating lever mechanism. This device, which prevents unintentional opening of hopper doors and includes pivoted and connected spaced locking members connected by an operating bar, is locked onto the door operating drive lever and is removed automatically from the levers on actuation of the door opening air cylinder when a cammed portion of the air cylinder ram contacts and lifts the operating bar thus allowing operation of the door operating mechanism.

3,710,730

VEHICLE HOPPER DOOR OPERATING MECHANISM

Kenneth J. Austgen, Griffith; Richard A. Corbett, Michigan City, both of Ind., and James J. Schuller, Dolton, Ill., assignors to Pullman Incorporated, Chicago, Ill.

Filed Dec. 29, 1969, Ser. No. 888,662
Int. Cl. B61d *7/02*
U.S. Cl. 105—250 **1 Claim**



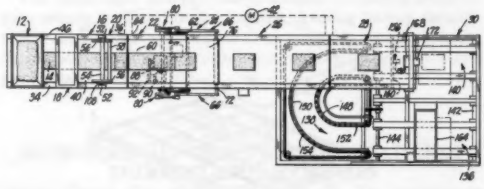
A hopper vehicle having hopper door operating mechanism opening a pair of laterally spaced bottom hopper door means, the mechanism including for each pair of door means a pair of opposed air cylinder means each connecting with a plurality of racks for driving same opposite to the other plurality of racks and in turn rotating a corresponding plurality of pinion means to each of which is connected a horizontal drive link which is carried in an arcuate path laterally and has connected to it a pair of laterally extending door connecting arm means for simultaneously opening and closing said pair of laterally opposed door means.

3,710,731

APPARATUS FOR FOLDING DOUGH

Victor F. Gugler, 8920 Helen Avenue, Sun Valley, Calif.

Filed Jan. 6, 1971, Ser. No. 104,447
Int. Cl. A21b *3/06*
U.S. Cl. 107—57 R **10 Claims**



Method and apparatus for forming folded dough sections for Danish pastry and the like including a conveyor belt system onto which is fed a relatively thin sheet of dough. The dough sheet is severed into sections and apparatus periodically swings a portion of the conveyor belt system upwardly and rearwardly and then downwardly and forwardly to fold at least a forward portion of each dough section back over a rear portion thereof to produce a series of folded dough sections.

3,710,732

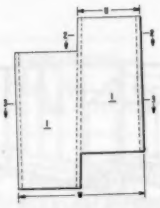
SHIPPING PALLET

Mont Meredith Phelps, Wilmington, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.

Filed Sept. 4, 1970, Ser. No. 69,557
Int. Cl. B65d *19/00*
U.S. Cl. 108—51 **10 Claims**

A pallet having a supporting plane for drums or cylinders in closest packed arrangement between two parallel sides and a spacer, connected to the plane, providing room beneath the supporting plane to insert fork lift fingers. The supporting

plane has a plane outline definable by a first and second zone on opposite sides of a midline between two parallel sides with a distance between the sides of less than two drum diameters. The first zone has a length according to the number of drum diameters it supports. The second zone has a length according



to the number of drum diameters, which may be one less than for the first zone, it supports. For a distance equal to a drum radius, the length of the second zone does not coextend with the length of the first zone. Where the second zone supports one less drum, the noncoextending length is at both ends of the second zone.

3,710,733

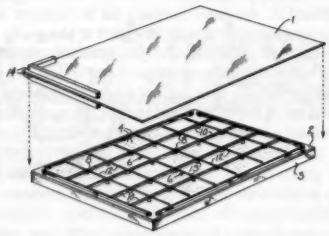
INTEGRATED REINFORCED PLASTIC UNIT AND METHOD AND APPARATUS FOR MAKING THE SAME

William K. Story, Wilton Manors, Fla., assignor to Plasteel Industries Incorporated, Fort Lauderdale, Fla.

Continuation-in-part of Ser. No. 66,748, Aug. 25, 1970, and a continuation-in-part of Ser. No. 66,749, Aug. 25, 1970. This application March 2, 1971, Ser. No. 120,086

Int. Cl. B65d *19/00*

U.S. Cl. 108—51 **8 Claims**



An integrated plastic unit and molding or thermoforming process and apparatus for producing the plastic unit from heated thermoplastic sheet material, such as polyethylene. The heated thermoplastic sheet material is placed over reinforcing forming members disposed on spacers which space the reinforcing forming members from the face of a mold, and the reinforcing members extend over substantially the entire face of the mold. The heated sheet material is then forced over the reinforcing forming members and over the face of the mold, such as by vacuum forming, to provide a generally flat surface extending in one plane and a bridging or web surface encapsulating the reinforcing forming members to provide a fused ribbed substructure of the thermoplastic sheet material reinforced by the forming members extending in a plane generally perpendicular to the flat surface. The reinforcing forming members may be metal members such as bars, wire, strip or rods, arranged in a grid-like network. The mold may be flat or of bowed configuration. The product is particularly utilized as a pallet for transportation by forklift trucks in which event legs are provided for the unit.

3,710,734

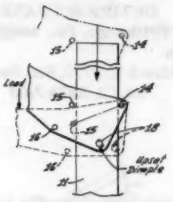
SHELVING SYSTEM

Richard H. Bofferding, Laguna Beach; Frederick C. Mead, Anaheim, and Richard L. Hendershot, Orange, all of Calif., assignors to Zero Cold, Inc., Anaheim, Calif.

Filed Aug. 21, 1970, Ser. No. 66,001

Int. Cl. A47b *9/10*

U.S. Cl. 108—108 **3 Claims**



A shelving system is provided which comprises a pair of cantilever-type support brackets mounted on vertical support posts. Each of the support brackets has a pair of pins extending transversely between its sides, and in position such that when the support bracket is turned upwardly, it can be slipped up and down the corresponding support posts, but when it is swung down to a horizontal position, the pins frictionally engage the side of the post to prevent the bracket from sliding. The support brackets can, in this manner, be set to any vertical position on the posts. The posts themselves are conveniently held in place between brackets mounted on the ceiling and floor of the room in which the shelving is installed, this being achieved by slipping the upper end of each post around its ceiling bracket, moving the post upwardly around the ceiling bracket, and then dropping the lower end of the post down over the floor bracket. A wire shelf is provided which is clipped, in a unique manner to be described, over the support brackets and securely held in place.

3,710,735

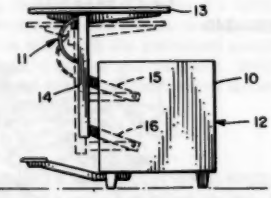
TABLE AND ELEVATION LOCK THEREFOR

James R. Litvinoff, Phillips; David F. Evans, and Joseph R. Klug, both of Manitowoc, all of Wis., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Jan. 4, 1971, Ser. No. 103,469

Int. Cl. A47b *9/00*

U.S. Cl. 108—146 **28 Claims**

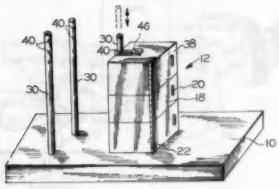


A table capable of having its support surface adjusted to different selected elevations, such as drafting table, which is equipped with an elevation lock mechanism including a pair of rollers normally urged by a spring into engagement with flat opposite side surfaces of a locking bar to anchor that bar, and the support surface to which it is connected, against vertical movement. The rollers are journaled in the openings of a roller support arm assembly which in turn is capable of being pivoted about a line passing through the bar's longitudinal mid-plane. By the depression of a foot pedal, the force of the spring upon the roller support arm assembly is relieved, the arm assembly shifts under the influence of gravity into an unlocking position, and the bar along with its connected support surface may be shifted into a different selected elevation where it may again be re-locked by simply releasing the pedal.

3,710,736
BEACH LOCKER

Phyllis R. Biondi, and Jery M. Kelso, both of Kineway, Rt. 728, Markham, Va.

Filed Dec. 16, 1970, Ser. No. 98,521
Int. Cl. E05g 1/00
U.S. Cl. 109—50 9 Claims

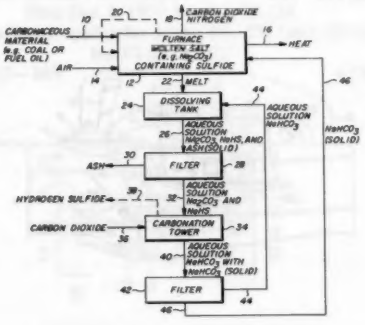


A beach locker consisting of a stacked array of containers each forming a coin-operated locker or the like, and having a pipe passing through a portion thereof from which the array is mounted and secured. The pipe is secured at its lower end in a slab of concrete. A locking or engaging means is disposed above the array of containers for securing the beach lockers onto the pipe so that they are not removable therefrom. The structure may be of stainless steel, Fiberglas, polyethylene-coated structures and other waterproof materials, as desired, to endure the weather conditions on ocean fronts and swimming pool decks. An umbrella may be mounted from the upper end of the pipe. The lockers may be variously shaped including trapezoidal, rectangular, and the like. The pipes as well may be arranged in various configurations including hexagonal or the like.

3,710,737
METHOD FOR PRODUCING HEAT

James R. Birk, Thousand Oaks, Calif., assignor to North American Rockwell Corporation

Filed Oct. 1, 1970, Ser. No. 77,219
Int. Cl. F23b 7/00
U.S. Cl. 110—1 J 18 Claims

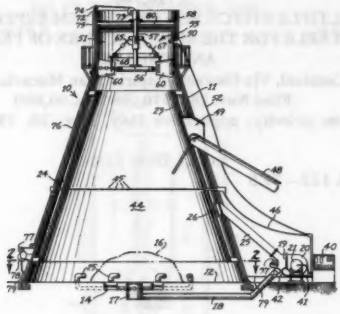


Heat is generated for external use by reacting a molten sulfide with a reactive form of oxygen such as air. The sulfate produced by this reaction is reduced to the sulfide form by contact with a carbonaceous material. A variety of carbonaceous materials may be used including common fuels and carbon-containing waste materials. Thus, the process can be used as a method of waste disposal as well as a method of generating heat.

3,710,738
TEMPERATURE MODULATED DRAFT SYSTEM FOR INCINERATOR

David M. Franklin, Jacksonville, Tex., assignor to Steelcraft Corporation, Memphis, Tenn.

Filed Aug. 12, 1971, Ser. No. 171,162
Int. Cl. F23g 7/00
U.S. Cl. 110—18 R 10 Claims



A conical-shaped, industrial type, waste incinerator having a temperature modulated forced draft system including a blower and an air inlet conduit for discharging forced air into the combustion chamber. The incinerator is also provided with concentric double walls about the combustion chamber to provide insulation and also to provide means for cooling the outer skin. The air inlet conduit is provided with a cooling branch conduit connected to the space between the double walls. The diverter valve means is located in the air inlet conduit for selectively, and alternately, opening and closing the respective air inlet conduit and cooling branch conduit. The valve selection means is controlled and modulated by an electrical apparatus responsive to the temperature within the combustion chamber.

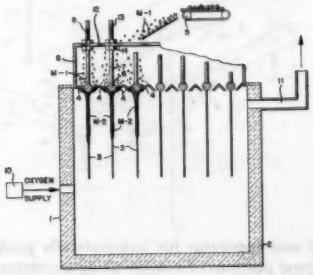
The incinerator may also be provided with an exit gas temperature sensor for shutting down the blower when the temperature in the exhaust opening of the incinerator is excessive.

The incinerator also preferably includes a variable emission gate means mounted in the exhaust opening having variable radial vanes which are adapted to be moved between open and closed positions by an electrical control responsive to the exit gas temperature sensor.

3,710,739
METHOD AND APPARATUS FOR INCINERATION OF THERMOPLASTIC MATERIALS

Joseph Gerald Roy, South Charleston, W. Va., assignor to Union Carbide Corporation

Filed Aug. 24, 1971, Ser. No. 174,324
Int. Cl. F23g 7/00
U.S. Cl. 110—18 R 33 Claims



A method and apparatus for the self-supportive incineration of thermoplastic materials wherein the thermoplastic material

serves as the fuel and wherein the heat from the incineration is utilized to melt the thermoplastic material to permit rapid gravity flow onto an essentially vertical heat conductive surface maintained at the vaporization temperature of the thermoplastic material. This method and apparatus provide a solution to the ecological problem of bulk waste disposal of thermoplastic materials.

3,710,740

MULTIPLE STITCH SEWING SYSTEM ESPECIALLY SUITABLE FOR THE MANUFACTURE OF PERIWIGS AND THE LIKE

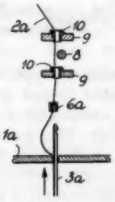
Luigi Canziani, Via Giovanni Papiri 4, San Macario, Italy

Filed Nov. 18, 1970, Ser. No. 90,600

Claims priority, application Italy, Nov. 20, 1972, 24610 A/69

Int. Cl. D05c *15/02*

U.S. Cl. 112—79.5 **2 Claims**



A sewing system, particularly suitable for the manufacture of periwigs and the like, according to which each fixing stitch is followed by at least two simple chain stitches formed of the same thread so as to obtain a very strong binding of the hairs to the support comprising a net or a very light fabric. Improved means are provided to practice the system of forming a multiple chain stitch seam.

3,710,741

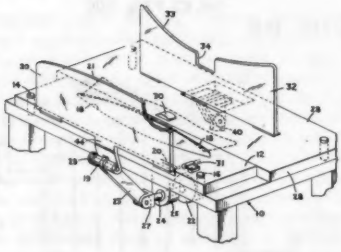
METHOD AND APPARATUS FOR AUTOMATIC CAPE JOINING

Richard J. McFalls, Troy, N.Y., assignor to Cluett, Peabody & Co., Troy, N.Y.

Filed May 26, 1971, Ser. No. 146,908

Int. Cl. D05b *21/00*

U.S. Cl. 112—121.15 **6 Claims**



Method and apparatus for automatically joining the cape and neckband portions of a collar along a concurrent arc. The cape is distorted to permit alignment of the arced cape edge with the neckband edge prior to seaming.

3,710,742

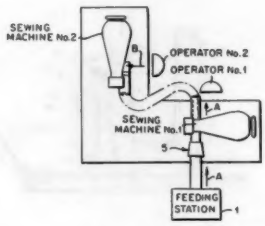
METHOD AND APPARATUS FOR PRODUCING SHIRT CUFFS AND THE LIKE

William Chercass, 2105 Woodlawn St., Allentown, Pa.

Filed March 2, 1972, Ser. No. 231,164

Int. Cl. D05b *1/00*

U.S. Cl. 112—121.27 **14 Claims**



Method and apparatus for producing shirt cuffs, or the like, using continuous strips of fabric and lining plies which are folded by means of a folder and longitudinally seamed by means of a double needle sewing machine. After being longitudinally seamed, pairs of transverse seams are simultaneously formed and segments are cut from the strip between those seams which form a pair of transverse seams. The cut off segments are cuffs which are ready to be inverted and set into the sleeve of a shirt.

3,710,743

THREAD-CUTTING MECHANISM FOR SEWING MACHINES

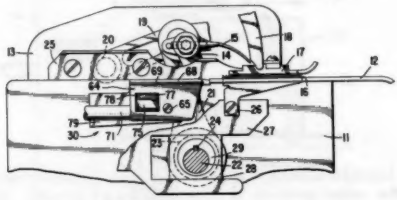
Nathaniel P. Lees, Dalmuir, Glasgow, Scotland, assignor to The Singer Company, New York, N.Y.

Filed Nov. 11, 1971, Ser. No. 197,681

Claims priority, application Great Britain, June 27, 1971, 35,165/71

Int. Cl. D05b *65/06*

U.S. Cl. 112—252 **4 Claims**

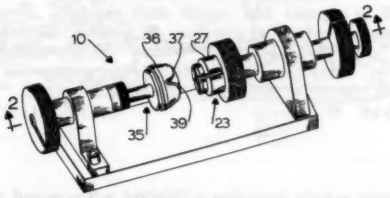


A thread-cutting mechanism for a sewing machine which employs a stream of air to carry the threads to the cutter and to remove the severed threads, and which is arranged periodically to interrupt the flow of air while the work feeding mechanism of the sewing machine is effective to cause variations in the air pressure in the thread-cutting device to facilitate movement of threads into the cutter without interfering with the transport of the work by the work feeding mechanism.

3,710,744
METHOD AND DEVICE FOR MANUFACTURE OF HEART VALVE

Samuel H. Goodenough; Ronald C. Brown, both of Oakland, and Benson B. Roe, San Francisco, all of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Feb. 24, 1971, Ser. No. 118,419
Int. Cl. D05b *1/00*; A61f *1/00*; F16k *15/00*
U.S. Cl. 112—262 15 Claims

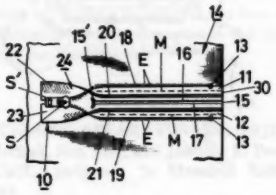


A method and device for the manufacture of a replacement heart valve made of a heart valve ring or frame having a metal ring base and struts and being covered with suture-accepting fabric and tissue. A rotatable valve ring holder has a means to hold the ring firmly and is movable axially. Opposed to the holder on a common axis is a rotatable arbor adapted to hold, successively, a primary mandrel and a secondary cusp-forming mandrel. The primary mandrel is provided with recesses in its side wall so as to nest with the ring and its struts and to enable wrapping and securing in place, e.g., by stapling, a precisely sized strip of animal, advantageously autologous, tissue to cover surfaces of the valve ring. The secondary mandrel is inserted in the arbor after removal of the first mandrel, and it is provided with pivotally attached arms. Each arm has a block at its end with a protruding, interior surface to hold the tissue cusps in coaptation, there being a corresponding number of such arms and blocks and such cusps. The tissue is sutured to the ring while the cusps are so held by the secondary mandrel, and thereafter the finished heart valve is removed from the device or assembly.

3,710,745
METHOD OF ATTACHING SLIDE FASTENERS TO GARMENT FABRIC

Kiichi Yoshikawa, Osaka, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1970, Ser. No. 94,436
Claims priority, application Japan, Dec. 27, 1969, 45/923
Int. Cl. D05b *3/12*
U.S. Cl. 112—265 6 Claims

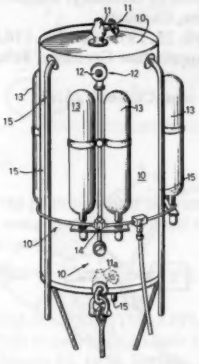


A method of attaching a slide fastener onto a fabric having a split providing two sewing edges along which the fastener opposed stringer tapes with their element-carrying edges laterally inverted away from each other, are simultaneously sewn up to an end portion thereof at which the slider is positioned whereupon said non-sewn portion and slider of the fastener can be drawn through said fabric split so that the pull tab of said slider is positioned face up against the reverse side of the fabric and the slider moved towards the other end of the tapes with the sewing stitches concealed from view.

3,710,746
BUOYANCY LIFTING DEVICES

Ian Barry Mcdonald, Rock Ferry, England, assignor to Cammell Laird & Company (Shipbuilders & Engineers), Limited, Cheshire, England

Filed Jan. 29, 1971, Ser. No. 111,074
Claims priority, application Great Britain, Jan. 31, 1970, 4,773/70
Int. Cl. B63g *8/00*; B63c *7/00*
U.S. Cl. 114—16 E 6 Claims

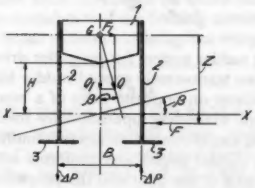


A buoyancy operated lifting and/or lowering device comprises a hollow body, means for flooding said hollow body, means for charging the hollow body with gas and at least one gas pressure relief tube extending downwardly from the upper or gas containing portion of the hollow body to a position below said hollow body. The gas pressure relief tube relieves pressure in the hollow body, as the device ascends and the ambient pressure to which the hollow body is subjected decreases. The buoyancy of the device is thereby maintained substantially constant during said ascent. The inlet for charging the hollow body with gas may have a valve which is responsive to the ambient pressure to which the hollow body is subjected. The buoyancy of the device is thereby maintained substantially constant during its descent.

3,710,747
DEVICE FOR HYDROFOIL CRAFTS SUITABLE TO REMOVE FROM THE BEGINNING THE TRANSVERSAL LISTING MOMENTS

Vinicio Guidi, Marina di Carrara, Italy, assignor to Cantiere Navaltecnica S.p.A., Anzio, Rome, Italy

Filed Sept. 28, 1970, Ser. No. 75,945
Claims priority, application Italy, Oct. 4, 1969, 7364 A/69; Oct. 31, 1969, 7419 A/69
Int. Cl. B63b *1/28*
U.S. Cl. 114—66.5 H 8 Claims



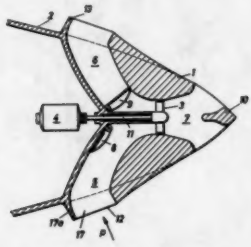
The invention prevents the effects of transversal listing moments on the hull of a hydrofoil craft by providing at least one hinged strut between the hull and a wing as well as control and

sensing means. The sensing means sense list causing forces and/or list causing flow and the control means tilt the respective hinged strut in response to the sensing means instantaneously into such an angular position that the listing moments are eliminated even before they can become effective on the hull.

3,710,748
STEERING DEVICE FOR SHIPS

Wolfgang Baer, Heidenheim-Mergelstetten, and Werner Fork, Bremen-Arsten, both of Germany, assignors to J. M. Voith GmbH, Heidenheim, Germany

Filed Feb. 25, 1971, Ser. No. 118,885
Claims priority, application Germany, Feb. 27, 1970, P 20 09 330.5
Int. Cl. B63h *25/46*
U.S. Cl. 114—151 **3 Claims**

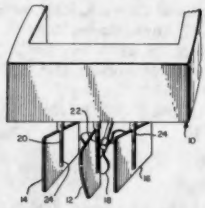


A longitudinal flow passage opens at the bow of a ship and has impeller means therein with first and second discharge flow passages branching from the longitudinal passage behind the impeller and opening on both sides of the hull. Controllable valve means in the discharge flow passages control the flow of water therethrough with the water being discharged from openings whose rear edges project outwardly of the hull surface a distance about one fourth of the width of the discharge opening.

3,710,749
BOAT FLANKING RUDDER SYSTEM

Charles S. Duryea, 168 N. Bridge St., Somerville, N.J.

Filed Feb. 8, 1971, Ser. No. 113,247
Int. Cl. B63h *25/06*
U.S. Cl. 114—163 **6 Claims**

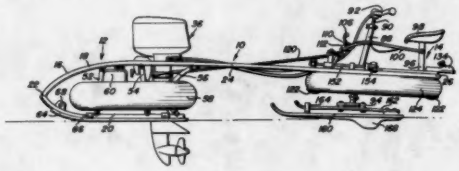


A flanking rudder system for propeller driven boats including at least two transversely spaced rudder blades mounted in flanking positions on opposite sides of a boat propeller, with blade portions extending operationally fore and aft of the propeller, and single control means for simultaneously varying the effective rudder angles and positions with respect to the longitudinal axis of the boat and the propeller. The invention includes the sole use of flanking rudders, and also flanking rudders in combination with a standard central rudder blade. In one embodiment the flanking rudders are detachable to provide simplicity of mounting and permit blade interchangeability and angular positionment.

3,710,750
SELF-POWERED WATER VEHICLE WITH REARWARDLY DISPLACED OPERATOR'S SLED

Aaron L. Welsh, 116 Smith Place, Warner Robins, Ga.

Filed Sept. 23, 1970, Ser. No. 74,697
Int. Cl. B63b *35/00*
U.S. Cl. 115—70 **16 Claims**

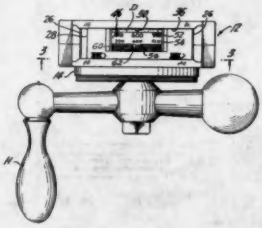


A water vehicle including a forward self-powered water planing section and a rear occupant supporting section. A pair of elongated side-by-side support arms extend rearwardly from the front section and the rear section is supported between the rear ends of the arms. The front section is powered by a steerable outboard motor with remote controls provided therefor on the rear section and includes water ski means for planing over the surface of a body of water at high speed with little water resistance. However, the forward or front section includes buoyant means elevated above the planing surfaces of the water ski means whereby the front section may be floated while at rest and the rear section additionally includes water ski means for planing over the surface of a body of water at high speed with little water resistance and the water ski means of the rear section is mounted for oxcillation about an upstanding axis. Also, the rear section additionally includes buoyant means disposed at an elevation above the undersurface portions of the rear water ski means for floating the rear section when at rest.

3,710,751
EXTENDED-SCALE INDICATORS

George Hamlin Leonard, 327 Hollow Tree Ridge Road, Darien, Conn.

Filed Sept. 28, 1970, Ser. No. 75,928
Int. Cl. B23q *17/00*
U.S. Cl. 116—115.5 **16 Claims**



Novel extended-scale indicators of various types are disclosed, primarily for milling machine lead-screws. The described indicators include a sprocket on the lead-screw shaft, usually two looped or continuous tapes cogged to the sprocket, and a protective enclosure having idlers that guide the tapes in a compact serpentine path. The lengths of the tapes are related so that one tape precesses in relation to the other in successive sprocket rotations, including extended-scale indication in opposite directions of operation, starting at a common zero. One modification provides direct English-to-

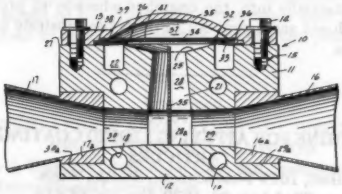
metric conversion. Another indicator provides turn-by-turn error calibration of the lead screw. Three identical individually adjustable indicators in tandem, having their zeros offset from each other, provide direct readings for centerline drawing dimensions and for drawing dimensions modified to allow plus and minus cutter off-set. Other tandem indicators are described.

3,710,752

LOCOMOTIVE WARNING HORN

Arthur C. Heehler, Park Ridge, and George J. Taylor, Northbrook, both of Ill., assignors to Mercor Corporation, Franklin Park, Ill.

Filed Jan. 11, 1971, Ser. No. 105,585
Int. Cl. G10k *9/00*
U.S. Cl. 116—142 FP **14 Claims**



A sound device particularly adapted for use as a locomotive warning horn characterized by a housing having a vibrator means for converting a constant flow of a gaseous medium into a pulsating flow which is removed from the housing through an outlet passageway having a first portion and a second portion in communication with a horn which extends at an angle to the first portion so that foreign matter entering the horn or resonator is not accumulated on the vibrator means. In one of the preferred embodiments, the outlet passageway of the device has a first portion which merges with a second and third portion both of which extend at an angle to the first portion and each of the second and third portions has a horn associated therewith so that the single vibrator means drives or produces the pulsating flow for both horns or resonators. In this embodiment, various means are utilized to insure a balanced flow of the pulsating gaseous medium through each of the horns, these means can be partitions for splitting the flow, means for restricting or impeding the flow into one portion such as a choke or a passageway with a curved path, a deflecting block at the junction of the portions or an inspirator which changes the boundary layer characteristics of one of the resonators to vary the impedance to the flow through the horn. One or more of these particular means can be utilized in the sound device to insure a balance in the flow therethrough to provide substantially equal strengths in the sounds emitted from each of the two resonators.

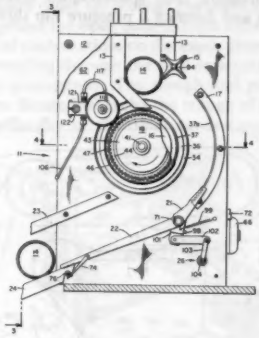
3,710,753

PROCESSING APPARATUS FOR OBJECTS

Thomas D. Birchall, San Jose, and Johnnie L. Powell, Turlock, both of Calif., assignors to Mandrel Industries, Inc., Houston, Tex.

Filed Jan. 19, 1970, Ser. No. 3,612
Int. Cl. B05c *1/02, 11/10, 11/14*
U.S. Cl. 118—2 **12 Claims**

Cylindrical cans each with one closed and one open end are metered one-by-one between a rotating driving wheel and a guide concentric thereto, each having a resilient rim that grasps each can by the closed end and rotates it in contact with a rotating printing wheel so as to imprint a band of ink completely around the can; and the can is then discharged downwardly onto a ramp guide on which it rolls in the direction of spin, away from and out of the apparatus. The ramp guide includes levers activated by the can to inhibit metering of the cans into the apparatus if there is a stoppage and backing up of the can flow; and to meter a predetermined



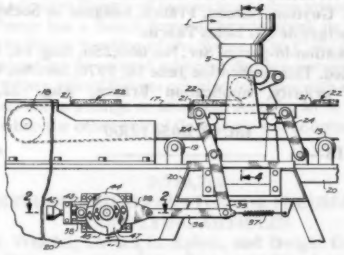
amount of ink to the printing wheel on passage of each can, so that just the right amount of ink is printed on, regardless of the rate of flow of the cans.

3,710,754

BREAD SLICE COATING APPLICATOR

John E. Pond, 17238 Barneston, Granada Hills, Calif.

Filed March 12, 1971, Ser. No. 123,607
Int. Cl. B05c *1/02*
U.S. Cl. 118—13 **6 Claims**



An applicator for automatically applying a coating of butter, mayonnaise, or other relatively soft material on slices of bread which are carried in sequence by a conveyor belt under the applicator. The applicator includes a perforated applicator cylinder having an internal screw conveyor which distributes the coating material, supplied from a reservoir, along the external surface of the applicator cylinder. An adjustable doctor blade removes excess coating material from the applicator cylinder. The applicator cylinder turns in opposite direction to the movement of the bread so that the coating material is wiped from the surface of the applicator cylinder. The width of the perforated portion of the applicator cylinder is less than the width of the bread and the applicator cylinder is movable to and from the bread in timed relation to the movement of the bread so that the coating terminates short of the edges of the bread to form a coating free margin.

3,710,755

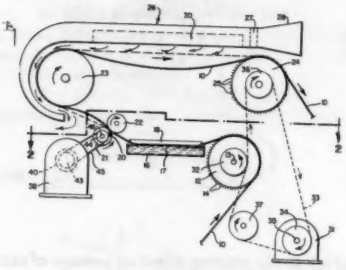
WEB HANDLING APPARATUS

Nils L. Hakanson, West Springfield, Mass., assignor to The Plastic Coating Corporation, Hampden County, Mass.

Division of Ser. No. 785,993, Dec. 23, 1968, Pat. No. 3,606,123. This application April 29, 1970, Ser. No. 43,645
Int. Cl. B05c *11/12*
U.S. Cl. 118—33 **12 Claims**

Apparatus including a combination of elements enabling a continuous web to be sprocket fed into a pressure nip without

creating wrinkles or causing tracking problems of the web, including two parallel spaced-apart moveable series of sprocket pins engaging the web and advancing it at a predetermined speed, two pressure rolls spaced-apart from the series of sprocket pins and forming a pressure nip through which the

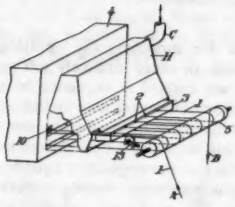


web passes following its disengagement from the sprocket pins, torque control drive means for driving at least one of the rolls, and speed control means connected to said series of sprocket means so as to maintain tension in the portion of the web running from the sprocket pins to the pressure nip.

3,710,756
APPARATUS FOR ENAMELING WIRE

Roland A. Goyffon, Macon, France, assignor to Societe Mafit Manufacture de Fils Isoles Taurus

Continuation-in-part of Ser. No. 660,256, Aug. 14, 1967, abandoned. This application June 16, 1970, Ser. No. 46,791
Claims priority, application France, Aug. 22, 1966, 6673791
Int. Cl. B05c *11/00*
U.S. Cl. 118—61 **4 Claims**



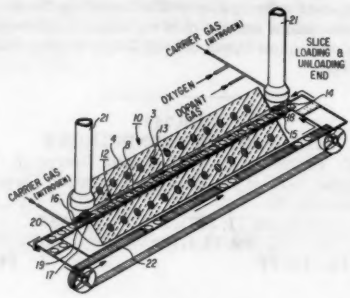
Wire enameling apparatus includes seriatum a preliminary heater, an enameling means, means to recover and burn solvent vapor evaporating from the enameled wire, and an oven. Means guide the wire in a plurality of passes through the enameling and coating means. Means utilize the combustion products for heating within the system.

3,710,757
CONTINUOUS DEPOSITION SYSTEM

Wilbur Arthur Porter, College Station, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 756,186, Aug. 29, 1968. This application Dec. 9, 1970, Ser. No. 96,580
Int. Cl. C23c *13/08*
U.S. Cl. 118—48 **2 Claims**

Means pass a substrate through a hemi tubular vapor deposition chamber disposed within a furnace means. A plurality of gas feed means pass through each end wall of, and ex-

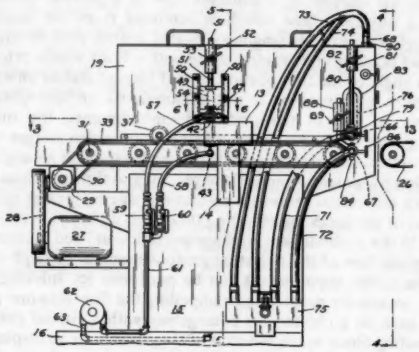


tend substantially into, the chamber whereby to preheat the gases. Effluent gases pass out through the substrate entry and exit means.

3,710,758
MACHINE FOR APPLYING LIQUID COATING TO ARTICLES

Glenn A. Hoff, 1019 West 65th St., Seattle, Wash.

Filed Aug. 20, 1970, Ser. No. 65,618
Int. Cl. B05c *11/00*
U.S. Cl. 118—63 **6 Claims**



This machine includes a housing, conveyor means arranges to convey a continuous procession of spaced apart articles to be coated through said housing, means within the housing for applying liquid coating to the articles near the location where they enter the housing, and blower means in the housing positioned near the location where the articles pass out of the housing for directing thin flat blade like jets of air onto the coated articles to blow excess coating off of them.

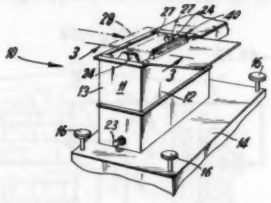
3,710,759
WIPER MEANS FOR LIQUID FLUX APPLYING APPARATUS

Louis V. Tardoskegyi, Montreal, and Donald A. Elliott, Brossard, Quebec, both of Canada, assignors to Electrovert Manufacturing Co. Ltd., Montreal, Quebec, Canada

Filed Nov. 12, 1970, Ser. No. 88,557
Int. Cl. B05c *11/02*; H05k *3/34*
U.S. Cl. 118—123 **7 Claims**

A flux coater is arranged to apply liquid flux to the undersurfaces of substantially flat workpieces moved thereover along a path of workpiece travel. A brush is mounted on the

coater to extend across the path of travel downstream of the point of flux application, and is mounted for pivotal movement between an active position, in which it contacts the flux coated surfaces of the workpieces to wipe excess flux



therefrom, and an inactive position in which it extends downwardly into the flux in the coater. The mounting means for the brush provide for ready and easy adjustment of the effective height of the brush, and furthermore limit movement of the brush to each of the inactive and inactive positions.

3,710,760

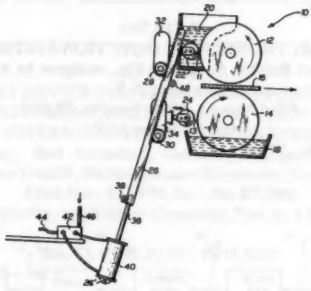
METHOD AND/OR APPARATUS FOR CONTINUOUS PRODUCTION OF 4-PLYWOOD

William J. Hopping, Pocomoke City, Md., assignor to Champion International Corporation

Division of Ser. No. 769,216, Oct. 21, 1968, abandoned. This application Jan. 25, 1971, Ser. No. 109,469

Int. Cl. B05c *1/02*

U.S. Cl. 118—227 **8 Claims**



Conventional glue applicator rollers and associated doctor rolls including a detachable mechanism which imparts a reciprocal motion to the doctor rolls during the operation of the apparatus. The initial unequal spacing of the doctor rolls from the applicator rollers is maintained during operation with the result that the upper and lower surfaces of a veneer ply receive unequal glue coatings. Reciprocating the doctor rolls reverses the surface to which the greater amount of adhesive is applied as veneer plies pass through the applicator rollers, thus facilitating the continuous fabrication of 4-ply laminates with a strong balanced glue line.

3,710,761

ANIMAL SHIPPING CRATE

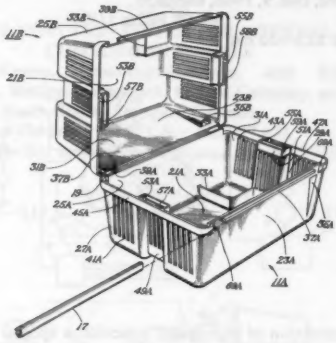
Frederick S. Gregory, Dallas, Tex., assignor to Aeropet, Inc., Dallas, Tex.

Filed Aug. 25, 1971, Ser. No. 174,606

Int. Cl. A01k *01/02*

U.S. Cl. 119—19 **13 Claims**

The specification discloses an animal shipping crate, especially useful for airlines, and which comprises two identical half sections, each of which is formed from a unitary piece of plastic. Each half section has side walls which slope outward from a closed end toward an open end and which may be nested within each other for storage purposes and assembled by coupling together the open ends to form a crate. Formed in the closed end of each section, on the inside thereof, is a water trough and extending through the wall structure of each section is a water passageway. The trough and passage-way of each section are located whereby the trough of one section is below the passageway of the other section regardless upon



which end the assembled crate is resting. Each section also has outwardly extending flanges formed on opposite sides adjacent their open ends whereby the two sections may be locked together by elongated C-shaped clamps adapted to fit around adjacent flanges of two sections when joined together. Each flange has a notch formed therein along its associated side to facilitate bending of the flange. The C-shaped clamps are adapted to fit around adjacent flanges outward of each notch. Either pair of flanges coupled together with a C-shaped clamp serves as a hinge to allow the sections to be opened or closed when the other pair of flanges are not coupled together.

3,710,762

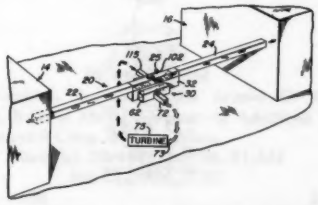
METHOD AND APPARATUS FOR PNEUMATIC CONVEYING ARTICLES

John S. Wendel; Lavern L. Kaiser, and Dwight Grille, all of Fort Recovery, Ohio, assignors to said Wendel and Kaiser, by said Grille

Filed July 7, 1971, Ser. No. 160,274

Int. Cl. A01k *29/00*

U.S. Cl. 119—82 **17 Claims**



Live chickens are conveyed through a conduit including a suction intake section connected to a pressure discharge section by an intermediate section having an air suction port, a pivotable door, and an air pressure port within each end portion. Air is alternately sucked through the suction ports and is alternately blown through the pressure ports by operation of a valve system actuated in response to a device which sense the presence of each chicken within the conduit. The pressure within the discharge conduit section is sensed for controlling the flow rate of the air blown through the discharge section to assure that the chickens flow at a substantially uniform rate through the duct.

3,710,763
HIGH SPEED FUEL INJECTION SYSTEM

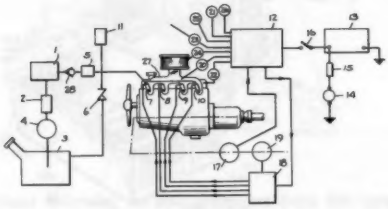
Jacques Bassot, Paris, and Louis Monpetit, L'Etang la Ville, both of France, assignors to Societe des Procedes Modernes D'Injection Sopromi, Les Mureaux, France

Continuation of Ser. No. 816,767, April 16, 1969, abandoned, which is a division of Ser. No. 630,035, April 11, 1967, Pat. No. 3,456,628. This application Nov. 10, 1969, Ser. No. 871,670

Claims priority, application France, April 13, 1966, 6657392; Dec. 9, 1966, 6686830

Int. Cl. F02m 51/00

U.S. Cl. 123—32 EA 5 Claims



Construction of high speed injectors, a special type switch mechanism for synchronizing the operation of the injectors to the angular position of a motor shaft, a unijunction transistor time delay circuit whose base and emitter voltages are varied in response to variations in different parameters, rapid switching bistable control circuits, which control the injection period in one state, damping circuits for the injector, circuits for transferring the electromagnetic energy liberated by current interruption in one injector coil to the next injector coil to be activated, and circuits for regulating a motor driving a generator to correspond to the voltage, current or power output of the latter.

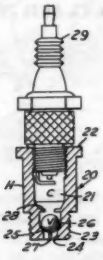
3,710,764
IGNITION APPARATUS

Joseph A. Jozlin, Warren, Mich., assignor to William T. Sevald, Royal Oak, Mich.

Filed Feb. 26, 1971, Ser. No. 119,185

Int. Cl. F02p 23/00

U.S. Cl. 123—32 SP 10 Claims



A jet flame ignition apparatus for internal combustion engines having a pressure chamber including the spark-plug and equipped with a one-way valve controlling a relatively large port allowing relatively free entry of fuel mixture into the chamber from the cylinder during the piston compression stroke and preventing free exit of burning fuel mixture from the chamber during the piston power stroke to trap the expansion of the burning gases in the chamber to produce pressure, and at least one relatively small jet passage leading from the chamber to the cylinder for emitting the burning fuel mixture from the chamber in a jet flame propelled by the pressure in the chamber into the cylinder to ignite the fuel mixture in the cylinder.

3,710,765
CONTROL INSTALLATION FOR THE COOLING AIR FAN OF INTERNAL COMBUSTION ENGINES

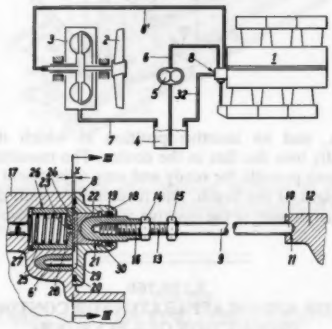
Heinz Dorsch, Lenzhalde 3, Ditzingen, Germany

Filed Sept. 7, 1971, Ser. No. 177,968

Claims priority, application Germany, Sept. 8, 1970, P 20 44 382.7

Int. Cl. F01p 7/04

U.S. Cl. 123—41.12 18 Claims



A control installation for the cooling air fan of an internal combustion engine which is driven from the engine by way of a hydraulic coupling, in which the admission of the hydraulic medium to the hydraulic coupling is controlled by utilizing the expansion of the engine housing caused by the operating temperature of the internal combustion engine as the adjusting magnitude for the control device.

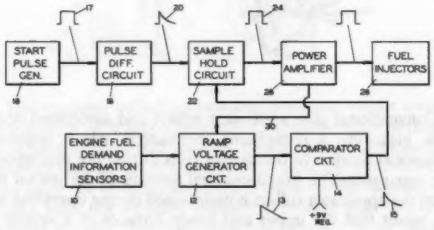
3,710,766
ELECTRONIC FUEL INJECTION SYSTEM

Richard Bert Beishir, St. Louis, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed May 14, 1970, Ser. No. 37,094

Int. Cl. F02m 51/02

U.S. Cl. 123—32 EA 5 Claims

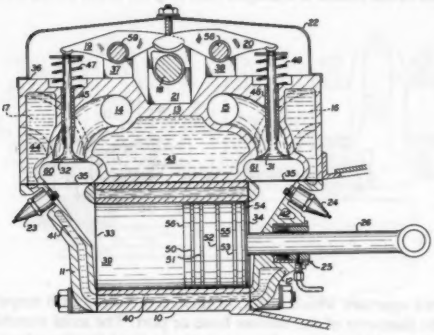


An electronic circuit for metering solenoid fuel injectors for an automobile is controlled entirely by voltages produced by a plurality of electrical sensors of engine operating conditions. A ramp voltage generator is triggered by an engine produced pulse to generate a pair of sawtooth output voltages having equal but opposite slopes determined by the sensor outputs, and at the same time a current pulse for opening the fuel injectors is initiated. When the sawtooth voltages reach and exceed a reference level they actuate a comparator circuit, which produces an output pulse that causes a transistor circuit to terminate the current pulse and close the fuel injectors. The end of the current pulse causes the ramp voltage generator and the comparator circuit to be reset to their initial conditions.

3,710,767
EIGHT CYCLE TWIN CHAMBERED ENGINE

Robert Smith, 212 Willis Ave., Mineola, N.Y.

Filed Aug. 13, 1969, Ser. No. 850,695
Int. Cl. F02b 75/16
U.S. Cl. 123—63 11 Claims

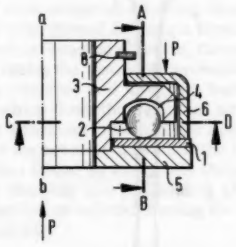


A reciprocating internal combustion engine that operates as an eight cycle twin chambered engine, in as much as the number of cycles have been determined by the number of breathing cycles pertaining to or within each cylinder. This design allows four cycles to take place in the inward combustion chamber and four cycles to take place in the outward combustion chamber of each cylinder. Thereby maintaining the breathing characteristics of a four cycle engine with the major basic difference being that this system allows the firing of each cylinder on the average of once per revolution of the crank shaft instead of once in two revolutions of the crank shaft.

3,710,768
ROTARY DEVICE FOR ELEMENTS SUBJECTED TO AXIAL MOVEMENT, PARTICULARLY FOR VALVES IN INTERNAL COMBUSTION ENGINES

Arnold May, Bad Nenndorf, Germany, assignor to Teves-Thompson GmbH, Barsinghausen/Hannover, Germany

Filed Nov. 5, 1970, Ser. No. 87,300
Claims priority, application Germany, Nov. 6, 1969, P 19 55 820.4
Int. Cl. F16k 31/00; F01l 3/10
U.S. Cl. 123—90.3 10 Claims

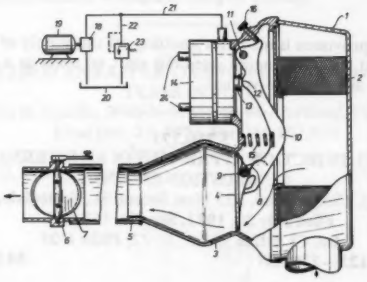


Valve rotators for spring loaded engine poppet valves or the like operate during decreasing spring loads on the valve closing cycle to effect valve rotation when the valve head is on or closely adjacent the valve seat. The rotator has a valve spring loaded cover, a valve cap with circumferential inclined grooves each receiving a spring urged rolling member and an axially deflectable energy accumulating spring means between the cap and cover engaged by the rolling members. During the valve opening cycle, the spring means is loaded by the cover, and the rolling members are moved to the shallow ends of the inclined grooves unloading the springs acting thereagainst. During the valve closing cycle, the valve spring load on the cover is decreased and the loaded energy accumulating spring means is released, forcing the rolling elements into the deeper ends of the grooves and effecting rotation between the valve cap and cover to rotate the valve.

3,710,769
FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Heinrich Knapp, Leonberg-Silberberg, and Reinhard Schwartz, Stuttgart-Sillenbuch, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 19, 1971, Ser. No. 107,631
Claims priority, application Germany, Jan. 21, 1970, P 20 02 444.6
Int. Cl. F02m 7/00
U.S. Cl. 123—119 R 6 Claims



In a fuel injection system, in order to prevent an intake air sensor to transmit those forces to a fuel control valve which are generated upon sudden thrusts of air in the engine intake tube, there is provided a valved passage which connects intake tube portions upstream and downstream of the intake air sensor and which opens in response to a predetermined pressure differential prevailing across the intake air sensor.

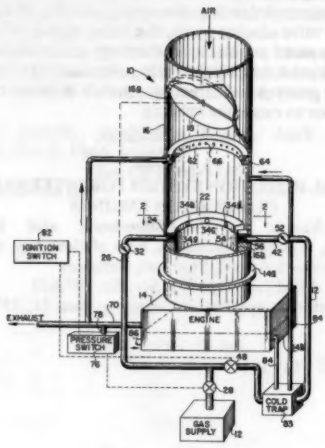
3,710,770
FUEL SYSTEM

Marc S. Newkirk, Lynnfield, and Arnold G. Falabella, Lawrence, both of Mass., assignors to American Environmental Research Corp., Malden, Mass.

Filed Oct. 16, 1970, Ser. No. 81,424
Int. Cl. F02m 21/02
U.S. Cl. 123—120 11 Claims

A fuel system for a gaseous fueled internal combustion engine injects gas into a mixing chamber for mixing with air by way of a plurality of check valves. The check valves prevent the buildup of an explosive fuel-air mixture in the fuel lines. In a preferred embodiment, the check valves have progressively increasing cracking pressures so that, as the operator opens the throttle, the increasing pressure differential across the valves causes them to open in succession so that a precisely controlled amount of gas is fed to the chamber for the prevailing engine speed and load conditions. During idling, gaseous fuel is fed to the mixing chamber through a separate fuel line to provide the proper fuel-air mixture to run the engine under no load. Also, engine exhaust products are injected into the

system's air intake just above the mixing chamber to blanket the gases in the mixing chamber and thus contain them.



Further provision is made for shutting off the supply of gas in the event that the engine does not start or stalls as a safety measure and to conserve fuel.

3,710,771

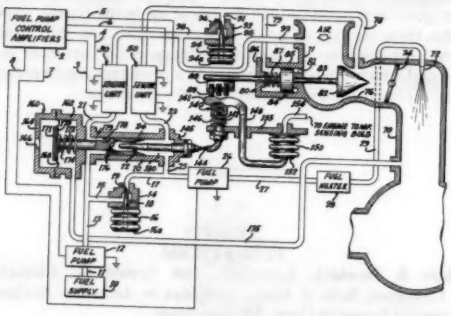
FUEL INJECTION APPARATUS IN AN INTERNAL COMBUSTION ENGINE

Vincent J. Cinquegrani, 333 West Second St., Scottsdale, Ariz.

Filed July 30, 1971, Ser. No. 167,627

Int. Cl. F02m *39/00, 31/12;* **F02d** *1/08*

U.S. Cl. 123—139 AW **54 Claims**



Fuel metering apparatus includes a variable venturi and an air-fuel mixture ratio control system variable for a plurality of throttle settings.

3,710,772

ANTI-FOULING SPARK IGNITION DEVICES

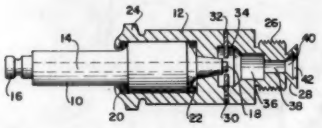
Richard C. Warner, Morris Plains, N.J., assignor to Eldapat General, Inc., Morris Plains, N.J.

Filed Aug. 7, 1970, Ser. No. 61,933

Int. Cl. H01t *13/02*

U.S. Cl. 123—169 R **18 Claims**

An axially elongated member is provided with an antechamber at one end thereof for receivably engaging the firing end of a spark ignition device. The axially elongated member includes a diverging-converging exit nozzle in its other end and a narrow bore or port extending between and connecting the antechamber with the exit nozzle. The nozzle's exit aperture is formed in the end face of the member and thus defines an annular baffle means axially displaced from the point where the narrow bore opens into the exit nozzle. Because of its diverging-converging construction the interior recess of the nozzle is enlarged with respect to the diameter of



its exit aperture which latter, in turn, is enlarged with respect to the diameter of the narrow bore or port. The axial member further includes means for preventing a fluid flowing along a wall surface perpendicular to the axis thereof from flowing over the end face of its other end and entering the enlarged interior recess of the exit nozzle.

3,710,773

MUSHROOM VALVE, ESPECIALLY FOR INTERNAL COMBUSTION ENGINES

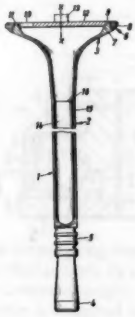
Ferdinand K. Piech, Stuttgart-Nord, and Rolf Weber, Stuttgart, both of Germany, assignors to Firma Dr. -Ing. h.c.F. Porsche K.G., Stuttgart-Zuffenhausen, Germany

Filed Nov. 6, 1970, Ser. No. 87,416

Claims priority, application Germany, Dec. 2, 1969, P 19 60 331.7

Int. Cl. F01l *3/00*

U.S. Cl. 123—188 AA **9 Claims**



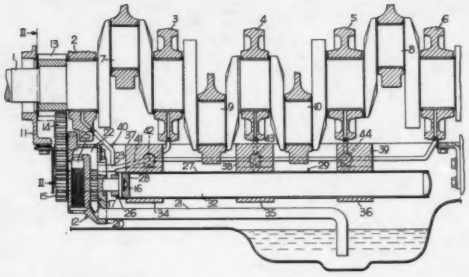
A mushroom valve, especially for internal combustion engines, having a valve stem provided with a hollow space extending from the stem end to the valve cone and closed in the area by a cover plate. This cover plate is joined with a shell zone of the valve cone in the plane of the valve seat armor by electron-ray welding.

3,710,774

LUBE OIL PUMP DRIVE FOR BALANCER

Roger J. Weseloh, Riverdale, and Warren R. Whaley, Chicago Heights, both of Ill., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Oct. 26, 1970, Ser. No. 83,774
Int. Cl. F02b 75/06; F16f 15/28
U.S. Cl. 123—192 B 9 Claims



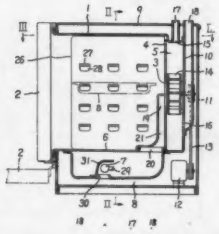
An engine balancer for a four cylinder in line internal combustion engine for balancing secondary vibration.

3,710,775

HOT AIR COOKING OVEN

Kazumi Tamada, Niwa-gun, and Tadayoshi Takase, Nishikamo-gun, both of Japan, assignors to Rinnai Kabushiki Kaisha, Nogoya-shi, Japan

Filed Dec. 13, 1971, Ser. No. 207,171
Int. Cl. F24c 15/16, 15/32
U.S. Cl. 126—21 A 10 Claims



A hot air oven comprises a heating chamber with a partition plate at the rear thereof defining a blower chamber therebehind in which is mounted a blower, the partition plate having an opening facing the blower. A combustion chamber is below the heating chamber and mounts a burner which produces heated air which flows through a hot air duct to the heating chamber at a location proximate the opening in the partition plate so that the hot air is drawn into the blower chamber. The hot air is then forced by the blower through side openings in the blower chamber into the heating chamber. The blower chamber also has an exhaust opening for discharge of exhaust gas to the outside.

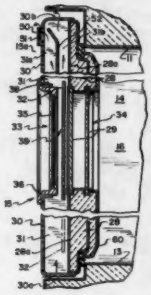
3,710,776

WINDOWED OVEN DOOR

Harold L. Frick, Marion, Ohio, assignor to Whirlpool Corporation

Filed Jan. 20, 1971, Ser. No. 108,051
Int. Cl. F23m 7/00
U.S. Cl. 126—200 10 Claims

A windowed oven door for a high temperature self-cleaning food cooking oven having walls that are heated periodically to a temperature which may reach as high as 950° F. to clean food deposits from the walls by a pyrolysis process in combination with a viewing window for observing the food cooking space within the oven and an air and light permeable protective viewing screen opposite the window for barring contact of the window from the exterior of the oven during both cooking cycles and self-cleaning cycles. The door includes a cooling air passage, and the protective screen has air openings in communication with the cooling air passage.



3,710,777

METHOD AND APPARATUS FOR GROWING GRAFT TUBES IN PLACE

Charles H. Sparks, 3725 S. E. Martin St., Portland, Oreg.

Filed Dec. 23, 1970, Ser. No. 101,031
Int. Cl. A61f 1/24
U.S. Cl. 128—1 R 15 Claims

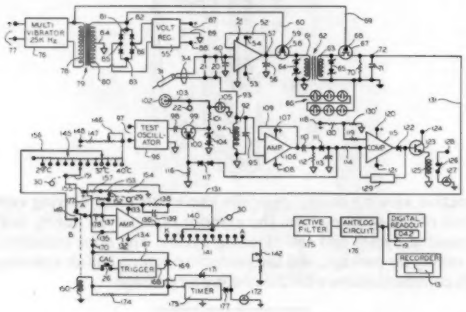
The invention is illustrated and described in connection with the growing of a femoro-popliteal artery graft. A tunneling tube is inserted through an incision above the inguinal ligament in the groin area adjacent an upper portion of the femoral artery and thrust downward subcutaneously through the thigh to a point below the knee on the inner or medial side of the leg adjacent a lower portion of the popliteal artery. A flexible silicone mandrel assembly having two layers of knitted Dacron on a flexible silicone rod is inserted in the tunneling tube. Then the tunneling tube is removed and the incision closed. The patients resumes his normal activity for a number of weeks during which time an ingrowth of connective tissue incorporates itself in the Dacron mesh, making an autogenous artery graft grown in the place where it is to be used.

In a second operation, a new incision is made below the inguinal ligament to expose the upper end of the graft tube containing the mandrel an an incision is made below the knee to expose the lower end of the graft tube containing the mandrel. Both ends of the graft and mandrel are cut off and the mandrel is pulled out. The graft is then anastomosed to the femoral artery above and the popliteal artery below, using the end-to-side method of anastomosis. The closing of the two incisions completes the operation with the graft providing a shunt for the femoro-popliteal artery extending from the groin to a point below the knee.

3,710,778
BLOOD GAS SENSOR AMPLIFIER AND TESTING SYSTEM

Frank L. Cornelius, Milwaukee, Wis., assignor to General Electric Company

Filed March 15, 1971, Ser. No. 124,364
Int. Cl. A61b *5/05*
U.S. Cl. 128—2 G **12 Claims**



The invention includes an amplifier for processing the output signal from an in vivo sensor for the partial pressure of gas in blood. Means are provided to protect the patient from excess currents and voltages. The first amplifying stage has a floating ground and is at substantially the same potential as the sensor. The output of this stage is chopped with a field effect transistor that derives its control voltage from a transformer which is driven at high frequency and which has high impedance or low leakage at power line frequencies. The chopped amplifier output signal is passed through another transformer which closely couples high frequencies. The amplified signal is demodulated by another field effect transistor in the secondary of this transformer after which the signal is further processed in circuitry that need not be isolated from ground. Means are provided for displaying the signal in terms of partial pressure of the gas in millimeters of mercury. The system includes means for testing the integrity of the sensor before and continuously after it is implanted in the body. Means are also provided for calibrating the sensor under known conditions which are conveniently established.

3,710,779
METHOD OF ULTRASONIC COUPLING

Raymond Howard Bunnell, Branchville, and Frank Guerin, Bloomfield, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 3,509, Jan. 16, 1970, abandoned. This application Dec. 14, 1971, Ser. No. 207,985
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 V **5 Claims**

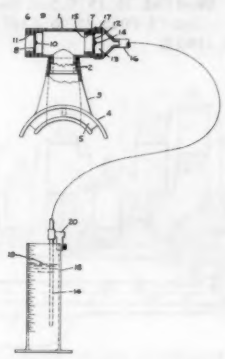
A method of assuring contact between an ultrasonic transducer and the skin of a subject during an ultrasonic monitoring operation utilizing a gel comprising polyvinylpyrrolidone and propylene glycol.

3,710,780
RESPIRATORY DEVICE WITH VARIABLE EXPIRATORY PRESSURE RESISTANCE

Robert A. Milch, 1405 North Forest Rd., Buffalo, N.Y.

Filed Aug. 5, 1971, Ser. No. 169,252
Int. Cl. A61h *1/02*
U.S. Cl. 128—25 R **6 Claims**

A device to permit more efficient breathing by medical patients comprising a mouthpiece having a passage portion for communication with the patient's mouth and inlet and outlet passages communicating with the first passage portion. The inlet and outlet passages are provided, respectively, with inlet and outlet check valves. A flexible conduit extends from the outlet check valve portion of the mouthpiece to a receptacle

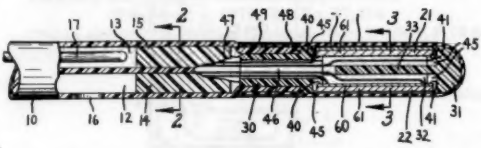


containing a liquid and the outlet end of the flexible conduit is immersed in the liquid to an adjusted depth to interpose a predetermined variable fluid resistance to air flow from said mouthpiece outlet passage by way of said conduit.

3,710,781
CATHETER TIP PRESSURE TRANSDUCER

Thomas B. Huthcins, IV, 310 N.W. Brynwood Lane, Portland, Oreg., and Miles Lowell Edwards, 13191 Sandhurst Place, Santa Ana, Calif.

Filed Oct. 12, 1970, Ser. No. 80,020
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 D **6 Claims**



A support member has a tubular shank end secured in the end of a catheter tube. A pair of elongated pressure transducer elements is mounted in opposite sides of the support. A flexible rubber sleeve sheathes the support and transducer elements and transmits external fluid pressure to outer faces of the transducer elements. Atmospheric pressure is communicated to inner faces of the transducer elements through said tubular shank and a lumen in the catheter tube.

3,710,782
METHOD OF TREATING HUMAN SKIN WITH A COMPOSITION FOR ELECTROMEDICAL APPLICATIONS

Ray L. Hauser, Boulder, Colo., assignor to Hauser Research and Engineering Co., Boulder, Colo.

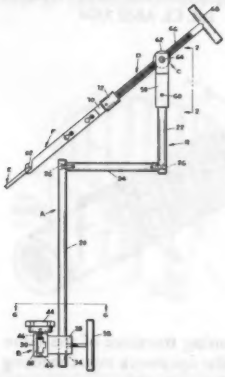
Filed Oct. 1, 1969, Ser. No. 862,967
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 E **7 Claims**

Method of applying a composition in aerosol form for use with electromedical devices, such as, electrocardiographic and electroencephalographic devices, the composition being used to treat the tissue before application of electrodes to clean it and render it electroconductive, and comprising an aerosol propellant carrying a solution of an alkali metal salt of an organic acid inn alcohol.

3,710,783
THORACIC INLET RIB RETRACTOR

Mario Enrique Jascalevich, 435 60th St., West New York, N.J.

Filed Jan. 11, 1971, Ser. No. 105,340
Int. Cl. A61b *17/02*; B66f *3/08*; B25g *3/38*
U.S. Cl. 128—20 15 Claims

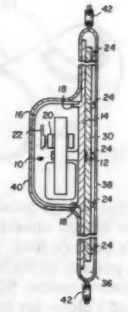


A rib retracting instrument for mounting on a surgical table employs a rigid, elongated boom member provided with swivel means at the top of the boom member. The swivel means is rotatable about a first axis parallel to the length of the boom member and about a second axis which is perpendicular to the first axis. A manually operable retracting member is connected to the swivel means to rotate therewith in all planes. The retracting member extends through the swivel means for linear movement with respect thereto, the retracting member being adjustable to self-retained position.

3,710,784
MASSAGING DEVICE

Clarence R. Taylor, 28 Woodside Dr., Penfield, N.Y.

Filed April 3, 1972, Ser. No. 240,716
Int. Cl. A61h *21/00*
U.S. Cl. 128—24.2 19 Claims

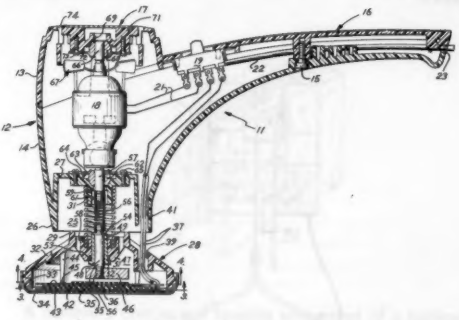


A massaging device comprising a plate adapted when vibrated by any suitable vibrating device and placed into intimate contact with a portion of a body to massage the portion. The plate is preferably flexible, and provided with projections extending from one surface thereof. A heating pad is held in register with the plate surface; the pad having openings through which the projections extend. The plate and pad are preferably provided with a belt or straps having fastening means for releasably securing the massaging device to the body portion with the heating pad and projection ends in engagement with the body portion. Alternatively, the massaging device may be provided with a handle by which the device may be manually placed into intimate contact with the body portion.

3,710,785
MASSAGER

Ronald O. Hilger, Elmhurst, Ill., assignor to Associated Mills, Inc.

Filed Nov. 27, 1970, Ser. No. 93,370
Int. Cl. A61h *1/00*
U.S. Cl. 128—36 13 Claims

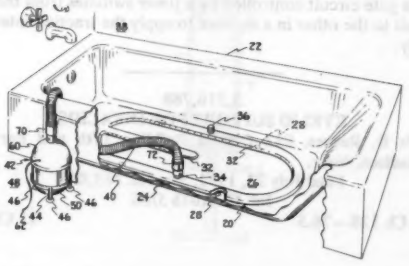


An improved massager providing a vibratory muscular and skin massage for easing strain, tension, pain and the like. The massager includes a "floating" head which is connected to the main housing of the massager by a coil compression spring and which is arranged so that the head may follow the body contours. The head is vibrated and is caused to be moved in an orbital path, with respect to the main housing, as a result of the rotation of a motor driven, eccentrically mounted weight positioned in the head. The head also includes a heating element which may selectively be actuated to permit infrared heat to be applied to the portion of the body being massaged.

3,710,786
HYDROPNEUMATIC MASSAGE EQUIPMENT

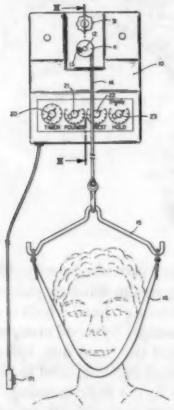
Edward H. Rico, Rt. 3, Box 2111, Sumner, Wash., and Joseph H. Jaeger, 18027 72nd West, Edmonds, Wash.

Filed March 4, 1971, Ser. No. 120,943
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 8 Claims



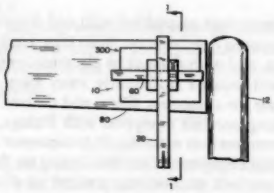
An air compressor assembled with and driven by an electric motor is mounted upwardly on three legs, each equipped with suction cups, and with respect to electrical energy, being well grounded and located sufficiently away from the immediate bathing locale, to compress, filter, and deliver air into a flexible air guiding conduit equipped with fittings, one being adjustable in conjunction with the air compressor exit to regulate the quantity of compressed air continuing on through the conduit into a unitized molded compressed air distributor placed about the bathing structure interior periphery and on the longitudinal center near the bottom of the bath structure, the distributor being formed with precisely located underwater air ejection orifices, suction cups, and dual compressed air receiving entry connectors, optionally selected to receive one or more compressed air conduit fittings located on one or both sides of the bathing structure.

3,710,787
INTERMITTENT TRACTION APPARATUS
Rodney R. Rabjohn, Arleta, Calif., assignor to Medidyne, Inc., Media, Pa.
Filed June 24, 1971, Ser. No. 156,373
Int. Cl. A61h 1/02
U.S. Cl. 128—75 8 Claims



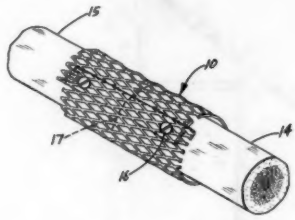
An intermittent traction apparatus is provided having an electric motor which pivots on its own shaft in such a manner that when the motor is running in a forward direction and traction is being applied to the patient, the motor itself pivots in order to close a normally open switch. When the motor is directed to turn in a reverse direction, the direction of its torque pivots the motor away from the switch, permitting the switch to open thus cutting off the circuit and stopping the rotation of the motor. An electric circuit is provided which includes a separate circuit for causing the motor to apply tension to the patient and another circuit releasing such tension, and a gate circuit controlled by a timer switches from the one circuit to the other in a manner to apply the traction intermittently.

3,710,788
EYELID SUPPORT FOR INVALIDS
Willis D. Reeves, 812 Omaha Building 17th and Fornam, Madison, Nebr.
Filed July 23, 1971, Ser. No. 165,088
Int. Cl. A61h 5/00
U.S. Cl. 128—76.5 11 Claims



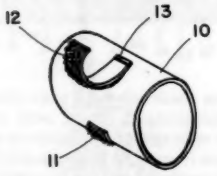
An eyelid support for invalids comprising an elongated lid support wire longitudinally adjustable with respect to a supporting vertical bar, which latter is vertically adjustable in a track follower, the track follower being horizontally adjustable along a base attachable to a bow of a pair of eyeglasses.

3,710,789
METHOD OF REPAIRING BONE FRACTURES WITH EXPANDED METAL
Robert A. Ersek, Saint Louis Park, Minn., assignor to The Regents of the University of Minnesota, Minneapolis, Minn.
Continuation-in-part of Ser. No. 35,815, May 8, 1970, Pat. No. 3,657,744. This application Dec. 4, 1970, Ser. No. 95,240
Int. Cl. A61f 5/04
U.S. Cl. 128—92 BC 9 Claims



A method of repairing fractures of the bone utilizing expanded metal or similar openwork metal sheeting as a fracture fixation device. Where possible the sheeting is wrapped around the bone, extending on opposite sides of the fracture site, and fastened. For other fractures a strip of the sheet material is secured to the bone on opposite sides of the fracture site or inserted within the medullary cavity. The fixation device holds the bone immobilized while permitting knitting and, at the same time, the surrounding tissue grows into and through the many fenestrations of the metal sheeting to permanently fix the device to the fractured bone.

3,710,790
ELASTIC BANDAGE
George E. Lemon, 286 Lora Ave., Youngstown, Ohio
Filed Dec. 2, 1969, Ser. No. 881,535
Int. Cl. A61f 13/10
U.S. Cl. 128—165 4 Claims

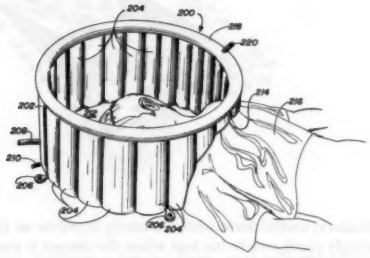


An elastic bandage for use on human limbs which consists of a length of tubular elastic material which can be easily slipped over the user's hand or foot. When the bandage is at the desired location a portion of the bandage is doubled over itself to provide sufficient tension. Suitable fastening means, such as mating pieces of Velcro, are provided to hold the doubled over portion in place.

3,710,791
INFLATABLE PATIENT ENCLOSURES
David W. Deaton, Dallas, Tex., assignor to Ahlbea Corporation, Dallas, Tex.
Filed March 9, 1970, Ser. No. 17,688
Int. Cl. A61m 15/00
U.S. Cl. 128—191 A 12 Claims

An inflatable housing includes bottom and side portions adapted to enclose a volume of atmosphere for use as an incubator or an oxygen tent. The side portions of the housing are

constructed from spaced apart flexible sheets to form air chambers which extend over a substantial area of the side portions. When the air chambers are inflated, the side portions become self-supporting and the air chambers form a confined air barrier about the volume of atmosphere surrounding the patient. For safety purposes in certain embodiments, at least two independent air chambers are provided around the housing, each of the independent air chambers having the capacity when inflated to maintain the side portions in an upright position. In other embodiments, a top portion has an opening defined therein, with an air chamber ring disposed about the periphery of the opening. The air chamber ring when inflated is capable of maintaining the shape of the opening regardless of the state of inflation of the air chambers in the side portions.



3,710,792

DOPPLER SHIFT ULTRASONIC VASCULAR FLOWMETER EMPLOYING ENERGY CONTENT OF REFLECTED WAVE

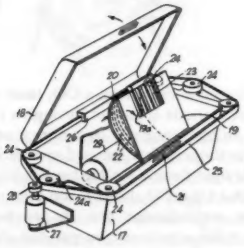
Leon Henry Light, London, England, assignor to National Research Development Corporation, London, England

Filed March 3, 1970, Ser. No. 16,106

Claims priority, application Great Britain, March 5, 1969, 11,825/69

Int. Cl. A61b *5/02*

U.S. Cl. 128—2.05 F **18 Claims**



A transcutaneous Doppler flowmeter, for blood flow measurement in the region of the ascending aorta, comprises an electro-acoustic transducer assembly and means for processing the transmitted and received signals to extract and exhibit substantially the maximum instantaneous frequency shift as determined by a relatively rapid decrease in the spectral power density with increasing frequency in a plot of spectral power density against frequency. Particular reference is made to a water filled ultrasonic transducer to reduce refraction losses at the transducer/tissue interface, and also to a multi-track spectrographic recorder to facilitate on-line operation.

3,710,793

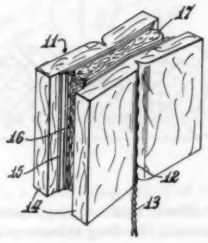
CATAMENIAL TAMPON

Jacob A. Glassman, 1680 Meridan Ave., Miami Beach, Fla.

Division of Ser. No. 875,903, Nov. 12, 1969, Pat. No. 3,618,605. This application May 17, 1971, Ser. No. 143,838

Int. Cl. A61f *13/20*

U.S. Cl. 128—285 **6 Claims**



A normally compacted tampon comprised of a laminated structure which embodies a central core of highly compressed absorbent material arranged between outer layers of absorbent material to initially absorb menstrual fluids and expand so as to spread the outer layers.

3,710,794

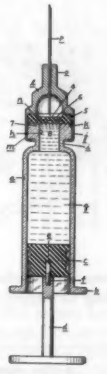
RECESSED DIAPHRAGM WITH ANNULAR GROOVES FOR HYPODERMIC SYRINGES

Walter A. Shields, 38-09 24th St., Jamaica, N.Y.

Filed June 16, 1971, Ser. No. 153,565

Int. Cl. A61m *5/28;* **A61j** *1/06*

U.S. Cl. 128—218 NV **5 Claims**



The filler opening of a hypodermic syringe vial is closed by a diaphragm clamped to the mouth of the vial by a closure cap carrying a hypodermic needle and the flexibility of the diaphragm is increased by annular grooves in the opposite horizontal surfaces of a center disc portion of the diaphragm to facilitate penetration of the diaphragm by the needle.

3,710,795

DRUG-DELIVERY DEVICE WITH STRETCHED, RATE-CONTROLLING MEMBRANE

Takeru Higuchi, and Harold M. Leeper, both of Lawrence, Kans., assignors to Alza Corporation, Palo Alto, Calif.

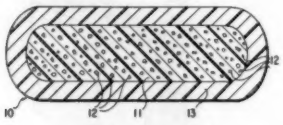
Filed Sept. 29, 1970, Ser. No. 76,499

Int. Cl. A61m *7/00;* **A61j** *1/00*

U.S. Cl. 128—260 **9 Claims**

Drug-delivery device for releasing drug at a controlled rate for a prolonged period of time is formed from a solid inner

matrix material having drug dispersed therethrough. Surrounding the inner matrix is an intimately contacting outer polymeric membrane, insoluble in body fluids, which contracts about the matrix as the matrix decreases in volume upon drug release. Both the inner matrix material and the outer polymeric membrane are permeable to passage of the drug by diffusion but the drug diffuses through the outer polymer



membrane at a lesser rate so that passage through the polymeric membrane is the drug release rate controlling step. The integrity of the intimate contact between the membrane and the matrix is assured even upon matrix depletion immediately following manufacture and for an extended period of time by reason of the reserve elastic recovery stress in the membrane.

3,710,796

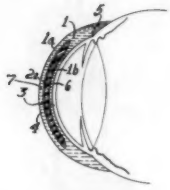
CORNEAL DRUG DELIVERY METHOD

Charles W. Neefe, Drawer 429, Big Spring, Tex.

Continuation-in-part of Ser. No. 45,333, June 11, 1970, which is a continuation-in-part of Ser. No. 562,022, May 16, 1966, abandoned. This application May 14, 1971, Ser. No. 143,545

Int. Cl. A61m 7/00

U.S. Cl. 128—260 **3 Claims**



An ophthalmic corneal drug delivery method using a flexable hydrophilic dressing to supply beneficial medications to the corneal area.

3,710,797

DISPOSABLE DIAPER

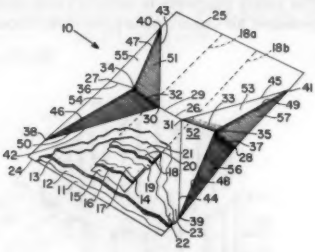
Mario S. Marsan, Springfield Township, Hamilton County, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 825,094, April 15, 1969, abandoned, which is a continuation-in-part of Ser. No. 803,768, March 3, 1969, abandoned. This application Feb. 26, 1971, Ser. No. 119,420

Int. Cl. A61f 13/14

U.S. Cl. 128—284 **4 Claims**

A disposable diaper is provided with a plurality of scored fold lines arranged in a symmetrical, complex pattern including a central dividing line so that the diaper can be folded on itself prior to use. Four pairs of inwardly directed folds originate from the side edges of the diaper to define two pairs of angular symmetrical areas of essentially triangular configuration having a common base on opposites sides of the central dividing line. The configuration of the scores is such that when the diaper is folded in half, the said angular symmetrical areas form a double gusset fold. This preforms the diaper into a particularly useful form which is easily fitted to an infant so that it snugly conforms to his legs when the diaper is pinned in place.



3,710,798

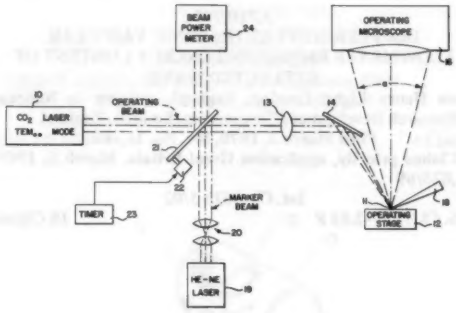
LASER SYSTEM FOR MICROSURGERY

Herbert C. Bredemeier, Sherborn, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Aug. 30, 1971, Ser. No. 176,175

Int. Cl. A61n 3/00

U.S. Cl. 128—303.1 **30 Claims**

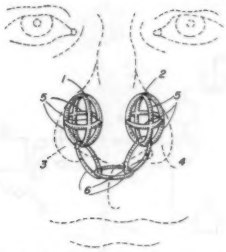


A beam of infrared energy from a CO_2 laser operating in its lowest order spatial mode is passed through a converging lens and directed to an operating site by a mirror or beam splitter. In order to locate the invisible focused spot of infrared energy a beam of visible light from a He-Ne laser is introduced coaxially into the path of the CO_2 laser beam by a removable mirror. In another embodiment the He-Ne beam is passed through a beam splitter to form two parallel channels focused by microscope objectives on the input ends of respective fiber optic light guides. A rotating chopper disc is positioned in front of the light guides to alternately block and pass light in each channel. The other ends of the light guides are connected to marker projectors located above the beam splitter for the CO_2 beam, but just out of the field of view of an overhead operating microscope. A lens and mirror system in each projector focuses the visible light through the beam splitter onto the focal point of the CO_2 beam at the operating site. If the intended site is above or below the CO_2 beam focal point, spaced red dots alternating at the frequency of the chopper disc will appear to the viewer through the microscope, indicating the need for further adjustment. Perfect adjustment is indicated by a single non-flashing dot.

3,710,799
NOSE DILATOR

Carlos Ramos Caballero, Calle Malwaloca, 2nd flatright, Sevilla, Spain

Filed June 29, 1970, Ser. No. 50,545
Claims priority, application Spain, June 30, 1969, 149,951
Int. Cl. A61m 29/00
U.S. Cl. 128—342 3 Claims

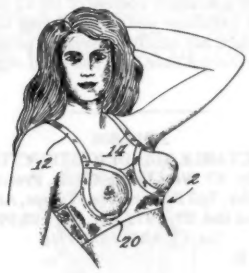


A nostril dilator includes a pair of open, generally spherical cages joined together by a flexible chain of inter-locked links, the cages being slightly larger than the nostrils but insertable therein so that the nose holds the cages in place therein.

3,710,800
UNDERGARMENT AND PROSTHESIS FOR USE THEREWITH

Virginia Marie Carey, 458 Winnetka Ave., Apt. 304, Winnetka, Ill.

Continuation-in-part of Ser. No. 841,880, July 15, 1969, abandoned. This application Oct. 26, 1971, Ser. No. 192,109
Int. Cl. A41c 3/00
U.S. Cl. 128—488 4 Claims



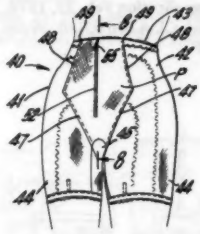
Disclosed is a uniquely constructed woman's undergarment which has encircling elastic-like loops for the breasts of the wearer, wherein the encircling portions of the garment are pivotally supported from connector straps in order to obtain bust separation, lift, support and centering enclosure while insuring proper fit and comfortable wearing of the garment. The disclosed garment, having breast encircling portions, is preferably worn with another support-type of garment such as a brassiere.

3,710,801
SUPPORT GARMENT

Myron Bienenfeld, Lawrence, N.Y., assignor to Magic Mold, Inc., Freeport, L.I., N.Y.

Filed March 23, 1971, Ser. No. 127,232
Int. Cl. A41c 1/00
U.S. Cl. 128—547 6 Claims

This garment is made of two way stretch woven cloth to hold and slim the abdomen, nip the waist and hug the wearer and give a trim appearance. This garment is smooth, comfortable and firm without binding. The garment holds the wearer evenly all around and improves posture. At the front of

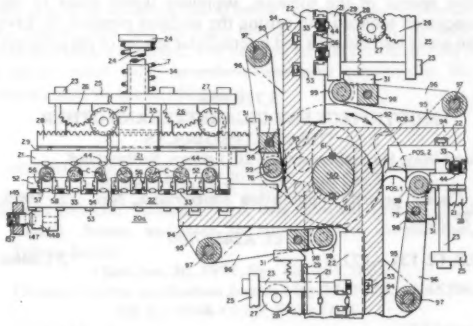


the garment there is a reinforcing panel of non-stretch cloth with a central vertical zipper to close it to flatten the stomach bulge. The zipper is opened to make it easier to don or doff the garment.

3,710,802
INDEXING CIGAR PRESSING MACHINE WITH AUTOMATIC INPUT AND OUTPUT

Dale R. Smith, York, Pa., assignor to York Research & Development Corp., Red Lion, Pa.

Filed Dec. 8, 1970, Ser. No. 96,020
Int. Cl. A24c 1/20, 5/06
U.S. Cl. 131—81 R 27 Claims



An automatic turret-type indexing pressing machine is loaded with round cigars. The cigars are pressed into square (or other) shape and discharged on to a conveyor. A turret-like hub on an index shaft supports a plurality of presses, each of which extends radially in cantilever fashion from the index shaft. In a preferred machine, there are four presses at 90° spacing, and one revolution of the index shaft corresponds to four work cycles. The index shaft is rotated by intermittent motion means to carry the individual presses sequentially and cyclically to the different work positions. At Index Position No. 1, a plurality of (for example) fifteen cigars are automatically loaded and aligned on the cavities of a first open press. The dies of the press are then closed to compress the round cigars. This work is done during a turret dwell period. The force required to close the press dies is provided by mechanical means which are independent of the intermittent motion means which drive the index shaft. During the same dwell period that cigars are being loaded into the first press at Index Position No. 1 and the press closed, other cigars in a closed second press at Index Position No. 2 are having holes formed in their heads, and, at Index Position No. 3, a third press is being opened and the pressed or squared cigars discharged on to a table from which they are taken away on a conveyor.

3,710,803

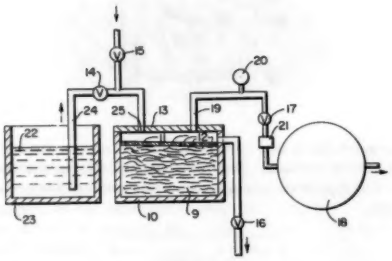
METHOD FOR TURGOR CONDITIONING TOBACCO

William H. Johnson, Raleigh, N.C., assignor to Research Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 866,508, Oct. 15, 1969, abandoned. This application Feb. 25, 1970, Ser. No. 14,060

Int. Cl. A24b *03/18, 09/00*

U.S. Cl. 131—140 P 8 Claims



Tobacco in shredded or strip form is turgor conditioned prior to sublimation drying to produce tobacco of high specific volume with minimal alteration of the chemical characteristics and intercellular structure of the tobacco by establishing a high vacuum around the tobacco to remove rapidly air and water vapor from within the cells and intercellular spaces of the tobacco, supplying liquid water to the evacuated tobacco and raising the ambient pressure to drive the water into the cells and intercellular spaces of the tobacco.

3,710,804

MOUTHPIECE FOR CIGARETTES AND OTHER TOBACCO PRODUCTS

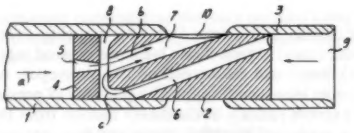
Josef Wey, Hunenbergstrasse 20, Luzern, Switzerland

Filed Nov. 24, 1970, Ser. No. 92,415

Claims priority, application Switzerland, Nov. 27, 1969, 17716/69

Int. Cl. A24f *47/00*

U.S. Cl. 131—171 A 3 Claims



This invention is a mouthpiece for cigarettes and other tobacco products which includes a tubular member, one end of which is placed in the mouth and the other end having a cigarette or other tobacco product inserted therein. A cylindrical filtering insert is positioned in the tubular member intermediate the ends thereof, the cylindrical insert being provided with ducts and lateral outlet opening which is so located that upon blowing air into the mouthpiece, a vacuum are created, causing the blown-in air and tobacco fumes to be directed through the lateral outlet so that no noxious fumes are drawn into the mouth. The mouthpiece further permits the drawing of smoke from the cigarette therethrough into the mouth in the usual manner.

3,710,805

PROCESS FOR PRODUCING MATERIAL FOR SMOKING

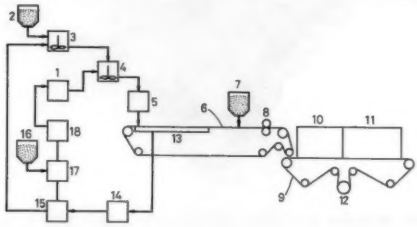
Einosuke Tamaki; Masao Kobari, both of Tokyo; Fumihiro Miyanowaki; Kunio Kato, both of Yokohama; Ko Nishida, and Yukio Shimizu, both of Tokyo, all of Japan, assignors to The Japan Monopoly Corporation, Tokyo, Japan

Filed Sept. 14, 1971, Ser. No. 180,353

Claims priority, application Japan, Nov. 4, 1970, 45/96453

Int. Cl. A01g *31/00;* A24b *3/14*

U.S. Cl. 131—140 C 20 Claims



A process is disclosed for producing sheet-like material for smoking which includes the steps of: culturing a fragment of a plant body of the genus Nicotiana in a liquid medium under aerobic conditions to derive tobacco cells suspended in the liquid, filtering the cultured broth containing the tobacco cells or the same mixed with fibrous materials and/or inorganic materials through a gauze of 50–120 mesh or filter cloth, so as to form a sheet-like cake having a thickness corresponding to dried weight above 50 g./m² and drying said sheet-like cake. Additionally, a process is disclosed for producing rod-like material for smoking which includes the steps of: culturing a fragment of a plant body of the genus Nicotiana in a liquid medium under aerobic conditions, to derive tobacco cells suspended in the liquid, separating the tobacco cells from the cultured broth, mixing the tobacco cells with tobacco leaf substances and/or fibrous materials and/or inorganic materials to form a paste with a moisture content of 80–93 percent, casting the paste into a rod-shape and freeze-drying said rod-shaped paste. The produce has excellent physical properties and the cigarettes made thereof have light and good organoleptic properties.

3,710,806

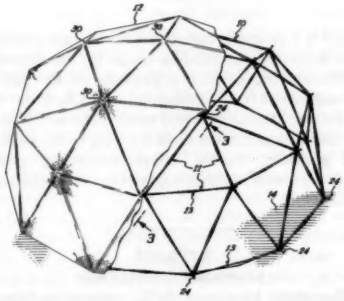
ERECTABLE BUILDING STRUCTURE

Vincent M. Kelly, 67 West Lessig Circle, Prescott, Ariz., and John R. Scudder, 740 Farmer Ave., Tempe, Ariz.

Filed Oct. 27, 1971, Ser. No. 192,996

Int. Cl. A45f *1/00, 1/16*

U.S. Cl. 135—4 R 10 Claims

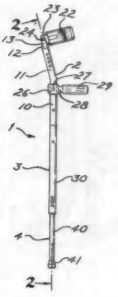


An expandable structure employing multihinged, scissor type mechanical linkages for supporting an associated flexible skin for providing a building expandable, collapsible and movable at will, and also providing a skeleton framework for rigid panels.

3,710,807
CRUTCHES

Carolyn Patricia Ferry, 2580 North Moreland Blvd., Shaker Heights, Ohio

Filed Nov. 18, 1971, Ser. No. 200,031
Int. Cl. A45b *1/00*
U.S. Cl. 135—49 8 Claims

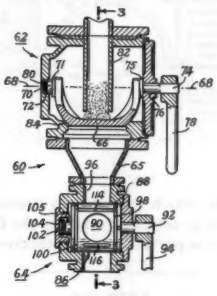


There is disclosed herein a sectional, metallic crutch of telescoping tubular construction having continuous, end-to-end columnar support between the handle of the crutch and the lower tip thereof whereby no substantial strain is placed upon fastening means for connecting the detachable sections.

3,710,808
PRESSURE LOCK FOR FEEDING PARTICULATE MATERIAL TO AND REMOVING IT FROM A PRESSURE VESSEL

Juan Celada, Col del Valle, Monterrey, and Patrick W. MacKay, Monterrey, Nuero Leon, both of Mexico, assignors to Fierro Esponja, S.A., Monterrey, N.L., Mexico

Filed Sept. 8, 1970, Ser. No. 70,027
Int. Cl. F16k *45/00;* C21b *13/00*
U.S. Cl. 137—1 20 Claims

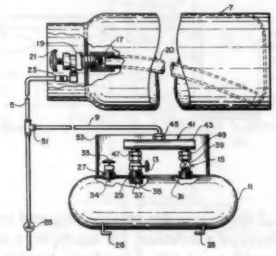


A pressure lock for feeding particulate iron ore to a moving bed, gaseous reduction sponge iron reactor and removing sponge iron therefrom comprising a pressure hopper with valve assemblies at the inlet and outlet thereof. Each valve assembly comprises a pair of valves, one of which performs a flow control function and the other of which performs a pressure sealing function. The construction is such that contact between the flowing material and the sealing surfaces of the sealing valve is avoided, thereby eliminating abrasion and erosion of these surfaces and prolonging the effective life of the pressure lock.

3,710,809
RESERVE FUEL SYSTEM FOR LIQUEFIED GAS POWERED ENGINES

Hugh E. Brown; Vourdon H. Fricke, and Henry C. Gerfen, all of St. Louis County, Mo., assignors to Fueltime Saver Corporation, Valley Park, Mo.

Filed Jan. 21, 1971, Ser. No. 108,308
Int. Cl. F16r *31/12;* F01m *59/00;* B65d *87/12*
U.S. Cl. 137—1 10 Claims

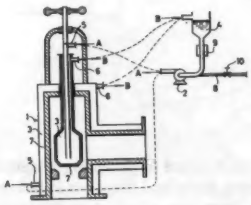


A reserve fuel system for an engine adapted to operate on liquefied petroleum gas (LPG) fuel supplied from a main fuel tank by means of a main fuel line. The system includes an auxiliary fuel line for connecting a reserve fuel tank to the main line for filling the reserve tank with liquefied fuel from the main tank and for supplying the engine with vaporized fuel from the reserve tank when the main tank is empty, and a cut-off valve in the auxiliary line to block communication between the reserve tank and the main line until the fuel in the main tank has been exhausted. The reserve tank is provided with a pressure relief valve to relieve excessive pressure in the reserve tank via the auxiliary line.

3,710,810
METHOD OF COOLING CUT-OFF VALVE FOR HIGH-TEMPERATURE CORROSIVE GAS

Hiroshi Shiraki; Yoshiaki Hara, and Masaaki Iguchi, all of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jan. 26, 1971, Ser. No. 109,785
Claims priority, application Japan, May 27, 1970, 45/45396
Int. Cl. F16k *49/00;* F03b *1/00*
U.S. Cl. 137—1 5 Claims



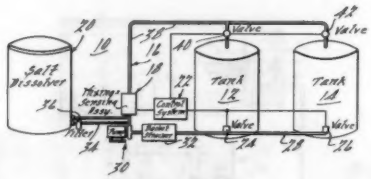
A cooling method of a cut-off valve for high-temperature corrosive gas in a circulation cooling system of the valve with a cooling liquid, in which method the interior of said valve is maintained at a temperature higher than the dew point of said high-temperature gas by supplying a small quantity of fresh cooling liquid in the cooling liquid pipe-line circuit so as to hold the temperature of said cooling liquid at about its boiling point at least the exit of the cut-off valve cooling pipe-line.

3,710,811

METHOD AND APPARATUS FOR CONTROLLING THE SALINITY OF A SOLUTION

Melvin E. Leverenz, and Kenneth H. Leverenz, both of St. Clair, Mich., assignors to Diamond Crystal Salt Company, St. Clair, Mich.

Filed June 2, 1970, Ser. No. 42,836
Claims priority, application Canada, July 14, 1970, 846,979
Int. Cl. G05d *11/08, 11/13*
U.S. Cl. 137—5 **13 Claims**



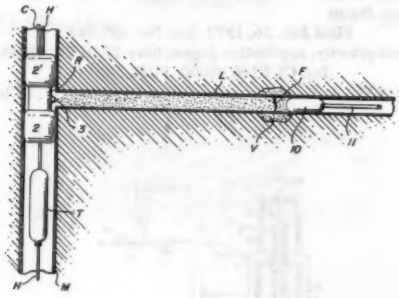
A method and apparatus for establishing and maintaining a preselected salinity of a solution, for example, a solution used to preserve cucumbers or other produce, having a recirculation loop including a detector for measuring salinity at one point in the recirculation loop, a salt dissolver supplying high-salinity solution introducable to the recirculation loop only upstream of the detector, and a control system responsive to salinity measured by the detector to control the introduction of high-salinity solution such that the measured salinity at the detector never exceeds the desired level. The salt dissolver may be replaced by a fresh water supply to provide a system for lowering salinity levels.

3,710,812

METHOD OF AND MEANS FOR REPAIRING LATERAL BRANCHES OF SUB-SURFACE PIPE LINES

Donald S. Wise, Levittown, Pa., assignor to Telafix Incorporated, Levittown, Pa.

Filed Aug. 5, 1971, Ser. No. 169,433
Int. Cl. F16l *55/18*
U.S. Cl. 137—15 **6 Claims**



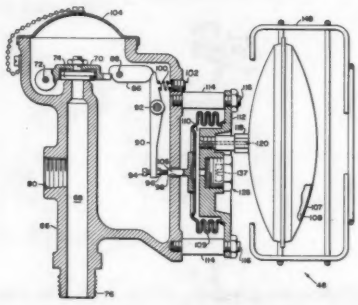
This invention is directed to providing a method of and apparatus for repairing faults and breaches in lateral branches of sub-surface pipe lines into which it is impracticable or impossible to introduce sub-surface pipe line repair apparatus. In accordance with the invention such apparatus is employed in the main line with auxilary apparatus introduced into the lateral branch to provide a combination whereby a fault or breach, hereinafter generically designated fault, constituting the source of infiltration into the lateral and hence into the main can be located, and thereafter by introduction of a chemical repair substance from the main line into the lateral branch and through the fault terminate the infiltration and seal the lateral against further infiltration.

3,710,813

PNEUMATIC FIRE DETECTION SYSTEM FOR DELUGE VALVE

Willis K. Hodgman, Jr., Taunton, Mass., assignor to Hodgman Manufacturing Company, Inc., Taunton, Mass.

Filed Feb. 16, 1971, Ser. No. 115,275
Int. Cl. F16k *31/143, 31/363*
U.S. Cl. 137—79 **10 Claims**



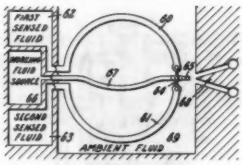
A system for initiating the release of a deluge valve. A pneumatic detection impulse, operating through a mechanical link, releases the pressure in a fluid-filled pilot line, thereby releasing the holding mechanism on the deluge valve. The pneumatic impulse is produced when the ambient air temperature rises rapidly in an expansible chamber communicating with ambient air through a vent having a restriction.

3,710,814

BOURDON TUBE FLUIDIC TRANSDUCER

Jeffrey N. Shinn, Scotia, N.Y., and Carl W. Woodson, Lomita, Calif., assignors to General Electric Company

Division of Ser. No. 824,984, May 15, 1969, Pat. No. 3,606,902. This application Sept. 9, 1970, Ser. No. 70,845
Int. Cl. G05b *11/44*
U.S. Cl. 137—83 **4 Claims**



A Bourdon tube which responds to pressure changes in a sensed fluid is used to selectively deflect the flow of a working fluid between various ports of a fluidic receiver.

3,710,815

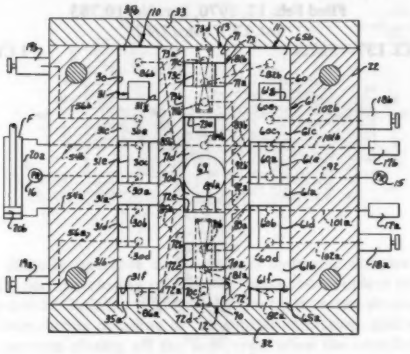
PNEUMATIC OSCILLATOR APPARATUS

Carl H. Morris, 2615 Ridge Avenue, and Henry N. Oliver, 2321 Cumberland Street, both of Rockford, Ill.

Filed Feb. 25, 1971, Ser. No. 118,891
Int. Cl. F15b *13/02*
U.S. Cl. 137—106 **9 Claims**

A pneumatic oscillator apparatus having a pressure operated five-way auxiliary valve for reversibly operating a reciprocable fluid operated device, a pressure operated five-way main valve for reversibly applying fluid pressure to the five-way auxiliary valve to reversibly operate the latter, and a pair of three-way pressure operated pilot valves for reversibly operating the main valve, which pilot valves are operated in

response to the pressure conditions at the controlled outlet ports of the main valve. Pneumatic control means are provided for regulating exhaust of fluid pressure from the controlled outlet ports of the main valve to control the dwell time of the main valve at each end of its stroke, and to thereby control the frequency of the pneumatic oscillator. An adjustable



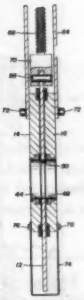
pressure regulated supply is provided for the auxiliary valve to enable adjustment of the pressure applied to the fluid operated device independent of the pressure applied to the pneumatic oscillator, and additional pneumatic controls are provided for regulating exhaust of fluid from the auxiliary valve to enable independent adjustment of the rate of movement of the fluid operated device in either direction.

3,710,816

KNIFE GATE VALVE

Darryll G. Prince, 1309 Rebecca Lane, Norman, Okla.

Filed Oct. 12, 1970, Ser. No. 79,895
Int. Cl. F16k *3/02, 25/00*
U.S. Cl. 137—242 **16 Claims**



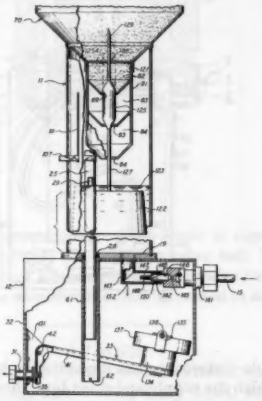
A sliding knife gate valve includes a housing and a sliding gate. The gate has a port therein which moves into and out of registration with inlet and outlet channels in the valve housing. The inlet and outlet channels of the valve housing contain wear rings and o-ring seals which are positioned to wipe the sliding gate clean. In addition, the housing can include additional packing so that the upper portion and lower portion of the gate can extend out of the housing.

3,710,817

MULTIPLE SOLUTES ADDITIVE APPARATUS

Walter C. Lorenzen, Hacienda Heights, Calif., assignor to Anzen Products, Inc., Arcadia, Calif.

Filed Feb. 3, 1970, Ser. No. 8,305
Int. Cl. B01d *11/00*
U.S. Cl. 137—268 **10 Claims**



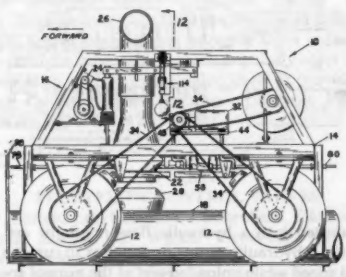
Apparatus for adding solute to a liquid such as swimming pool water in which a first mixing tank is supported on a second mixing tank. The first mixing tank is adapted to receive circulating water and metered amounts of either liquid or solid additives such as chlorine. The first tank has adjustable overflow means connecting to the second mixing tank from which second tank a float-controlled valve releases the water and solute mixture to the suction side of a venturi or a pump. The first mixing tank has means for receiving solid additives in either cake or granular form and also adapts to liquid additive containers with a drip control outlet.

3,710,818

IRRIGATION SYSTEM

James G. Imeson, deceased, late of P. O. Box 632, Jackson, Wyo. (Joyce Imeson Lucas, executrix)

Continuation-in-part of Ser. No. 749,020, July 31, 1968, Pat. No. 3,575,200. This application June 26, 1969, Ser. No. 836,863
Int. Cl. B05b *9/02*; **E01h** *3/02*
U.S. Cl. 137—344 **16 Claims**

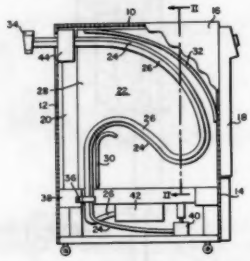


An irrigation vehicle comprising a self-propelled vehicle adapted to move along a water supply line or a source of water supply means on the ground. Water delivery means are provided on the vehicle for detachable connection to the pipeline or the source of water at predetermined stations along the path of travel of the vehicle. The vehicle is provided with turning means so that it may be moved laterally across a field that is being irrigated.

3,710,819
HOSE AND HOSE STORAGE ARRANGEMENT FOR A PORTABLE DISHWASHER

Hugh C. Williamson, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 10, 1970, Ser. No. 88,379
Int. Cl. B65h 75/36
U.S. Cl. 137—355.17 7 Claims

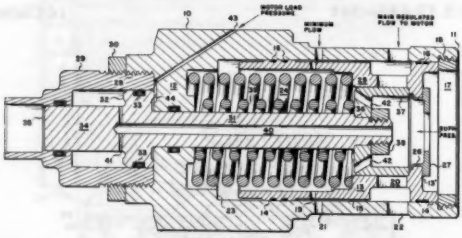


A portable dishwasher has a generally planar hose storage space in which the supply and drain hose therefor are stored in generally serpentine form to permit pulling the hoses out for connection to a water supply and drain location, with at least one of the hoses having a cross-sectional configuration of generally elliptic or flattened form oriented with respect to the other hose so that one of its flatter sides is in facing relation to the opposing wall of the other of the hoses.

3,710,820
FLUID FLOW REGULATOR VALVE

William E. Simpson, Jr., Chambles, Ga., assignor to Rockhead Aircraft Corporation, Burbank, Calif.

Filed Aug. 11, 1971, Ser. No. 170,794
Int. Cl. F16k 31/12
U.S. Cl. 137—495 6 Claims

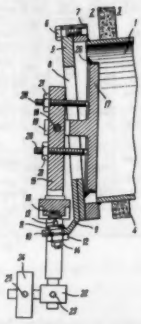


Incorporated into a hydraulic flow regulator are features which cause a hydraulic motor or actuator to run at a fraction of normal speed while unloaded and at the normal speed while loaded. These features consist essentially of a spring-loaded spool or piston in the flow regulator which blocks all except the fractional flow passages when the motor or actuator is pushing against low resistance. WHen the resistance encountered by the motor or actuator exceeds a predetermined level, the resulting hydraulic back pressure moves the piston or spool so that the normal flow passages in the flow regulator are uncovered, thus permitting operation at normal speed.

3,710,821
NON-RETURN VALVE

Lazar Isaakovich Turetsky; Anatoly Grigorievich Gryzlov; Filipp Yakovlevich Proskurovsky; Gennady Nikolaevich Lomachenko, and Nikolai Ivanovich Ageev, all of Moscow, U.S.S.R., assignors to Vsesojuzny Teplotekhnichesky Nauchno-Issledovatelsky Institut imeni F.E. Dzerzhinskogo, Moscow, U.S.S.R.

Filed Feb. 12, 1970, Ser. No. 10,783
Int. Cl. F16k 17/12
U.S. Cl. 137—527.8 1 Claim

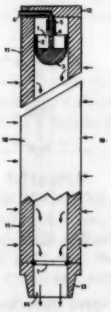


A non-return valve whose closing element is made in the form of a flat disc, has a sealing element of an elastic material on the periphery and is mounted on one end of a two-arm lever whose other end carries a counterweight. Said sealing element is made in the form of a cup whose working part is shaped as a truncated cone standing out above the surface of said disc and is directed by the larger base towards the body of said valve.

3,710,822
FLUID-FLOW FUSE

Samuel J. Lyda, Route 2, Flat Rock, Ala.

Filed Jan. 25, 1971, Ser. No. 109,301
Int. Cl. F16k 11/06
U.S. Cl. 137—549 3 Claims



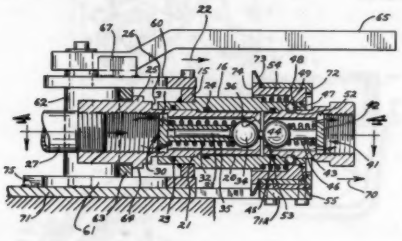
An improved pressure-actuated shut-off device designed as a fail-safe mechanism which automatically shuts off the flow of liquid hydrocarbon fuel or other organic liquids or gases when a pre-determined differential in pressure is reached. Particularly adaptable to use in or with liquid-fuel filters.

3,710,823

HYDRAULIC COUPLER WITH CAM ACTUATOR

Albam M. Vik, Brighton, Minn., assignor to Dempco, Inc., Minneapolis, Minn.

Filed Jan. 25, 1971, Ser. No. 109,336
Int. Cl. F16k 11/10
U.S. Cl. 137—594 10 Claims



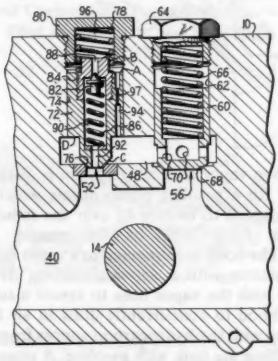
A directly operable cam actuated hydraulic coupler with which permits closing off flow through the couplers so that they can be isolated from any hydraulic pressure present on the lines during coupling or decoupling operation, and which also permits closing off the flow even when the couplers are still coupled together physically.

3,710,824

HIGH PRESSURE RELIEF VALVE

Kenneth R. Lohbauer, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 7, 1971, Ser. No. 141,229
Int. Cl. F16k 17/26, 31/12
U.S. Cl. 137—596 5 Claims



There is disclosed a control valve arrangement for controlling a double-acting hydraulic motor. A makeup valve and a relief valve are provided for precisely controlling the high pressure and the low pressure in a motor control passage of the system.

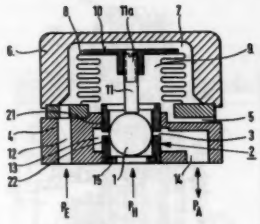
3,710,825

REVERSING PNEUMATIC AMPLIFIER

Hermann Otteni, Forchheim, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 13, 1971, Ser. No. 171,569
Claims priority, application Germany, Aug. 13, 1970, P 20 40 257.7
Int. Cl. F16k 11/00
U.S. Cl. 137—625.66 4 Claims

There is disclosed a reversing pneumatic amplifier including a valve ball movable in a sleeve for opening or closing a control slot provided circumferentially in the sleeve in a radial plane thereof. The valve ball is displaced in one or the other direction when a pilot pressure, indirectly exerting a force to the ball through a bellows and a push rod, exceeds or drops



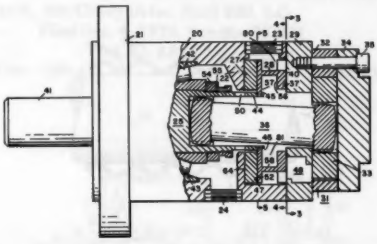
below a predetermined value. Said force is opposed by a supply pressure directly affecting the valve ball. Dependent upon the direction of displacement of the valve ball, the output pressure of the amplifier is either increased or decreased.

3,710,826

FLUID VALVE MEANS HAVING FEATHERING ACTION

George V. Woodling, 22077 West Lake Road, Rocky River, Ohio

Filed Sept. 3, 1971, Ser. No. 177,554
Int. Cl. F16k 11/02
U.S. Cl. 137—625.21 10 Claims



Fluid valve means having feathering action and comprising a plurality of annularly arranged fluid ports and a plurality of annularly arranged fluid conduction means relatively rotatably about an axis. Said fluid ports and said fluid conduction means respectively having opposite sides including substantially straight valve edges which angularly meet and cross each other at an acute crossing valve angle to provide for said feathering action upon relation rotatable movement therebetween.

3,710,827

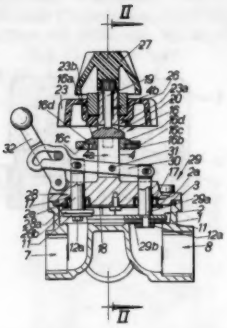
FLUID FLOW CONTROL VALVES

James F. Skitch, Leckhampton, Cheltenham, Gloucestershire, England, assignor to Walker Crosweller & Company Limited, Cheltenham, England

Filed Feb. 26, 1971, Ser. No. 119,164
Int. Cl. F16k 31/145
U.S. Cl. 137—637.4 10 Claims

A fluid flow control valve for controlling the flow of two different fluids through separate inlets to one or two outlets, the valve comprising two valve members adjustable along parallel linear paths, and, intermediate the valve members, a hinged control plate and a stop, the valve members are sprung loaded

into engagement with the plate which is urged into abutment with the stop, and for controlling the flow and degree of mixing the control plate is rotatable whilst the stop is adjustable along a path parallel to said linear path of the valve members.



3,710,828

TUBULAR METAL STRUCTURE

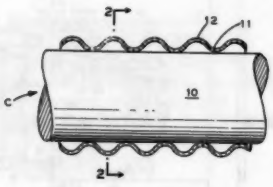
Gerard Ziemek, and Gert Nordmann, both of Hannover, Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed Jan. 25, 1971, Ser. No. 109,099

Claims priority, application Germany, Feb. 19, 1970, P 20 07 590.5

Int. Cl. H02g *3/04*

U.S. Cl. 138—171 7 Claims



A tubular metal structure formed from a steel tape converted to tubular shape with the side edges thereof in abutting relation to provide a longitudinal seam which is welded. The tubing may be transversely corrugated to increase the flexibility thereof; the tubing in plain or corrugated from being useful as conduit means or as sheathing for electrical cable. The steel from which the tape is formed has a specified carbon, manganese and silicon content to improve diverse properties of the fabricated tubing, including the welded seam thereof and the welding procedure.

3,710,829

LOOM TAKE-UP MECHANISM AND METHOD

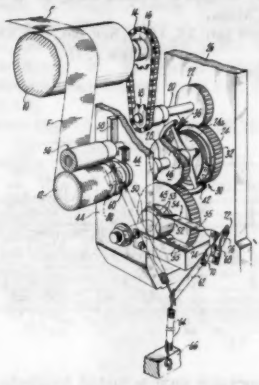
Thomas R. Johnson, Cropwell, and Luther K. Joiner, Anniston, both of Ala., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Oct. 12, 1971, Ser. No. 188,288

Int. Cl. D03d *49/12*

U.S. Cl. 139—304 5 Claims

Loom take-up mechanism and method involving the use of conventional friction-slippage means between the driving means and the driven cloth roll shaft, and the supplemental use of additional friction applying means to provide for additional slippage of the cloth roll shaft during the beginning of the build-up of the cloth roll, the effect of the additional friction applying means dropping to substantially zero at an intermediate part of the build-up of the cloth roll, leaving the conventional friction slippage means to control the remainder of the build-up of the cloth roll.



3,710,830

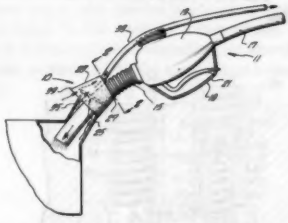
HYDROCARBON VAPOR COLLECTING APPARATUS

Stanley M. Gilson, 1625 Rancho Avenue, Glendale, Calif.

Filed Aug. 31, 1970, Ser. No. 68,142

Int. Cl. B65b *1/28*

U.S. Cl. 141—93 3 Claims



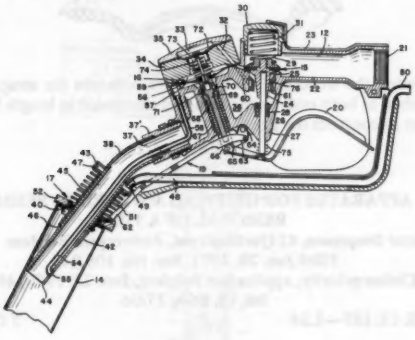
A hydrocarbon vapor collecting system is disclosed having an attachment for a gasoline pump nozzle which includes a hood that is adapted to loosely fit over the mouth of an automobile tank filler tube as the nozzle is inserted therethrough. The hood is connected to a vapor hose which, in turn, communicates with a vapor absorbing device. A fan communicates with the vapor hose to create a suction at the mouth of the hood to concurrently draw in air from the atmosphere along with the hydrocarbon vapors from the tank as the nozzle is filling the tank with gasoline. A closed end tubular support having an open end for receiving the end of the pump nozzle extending through the hood is also provided. The cross section of the open end of the support is shaped and dimensioned to sealingly engage the interior of the hood to enable the hood to be sealed from the atmosphere while the pump is supported on the tubular support during non-use.

The system is also adaptable to the large storage tanks utilized by the service stations, whereby the hood of the vapor collecting apparatus is adapted for connection to the filling hatch of the tank with the fuel truck filler nozzle extending therethrough. In other embodiments the hood is attached to a vent pipe located adjacent the tank or remotely therefrom. The vapor hose utilized in these systems can be adapted for connection to a vapor absorbing device located at the service station or on the fuel tank truck. In all of the embodiments the fan is provided to create a suction through the vapor hose to draw all of the hydrocarbon vapors displaced by the gasoline tank and prevent any leakage of the vapors into the atmosphere.

3,710,831
AUTOMATIC TRIP FILL NOZZLE

Peter S. Riegel, Columbus, Ohio, assignor to Gilbert and Barker Manufacturing Company, Greensboro, N.C.

Continuation of Ser. No. 769,239, Oct. 21, 1968, abandoned. This application June 16, 1971, Ser. No. 153,825
Int. Cl. B67d *5/375*
U.S. Cl. 141—207 10 Claims

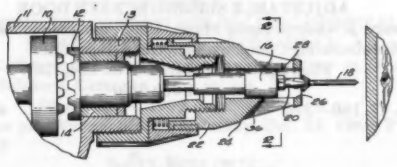


A safety automatic trip fluid dispensing nozzle for cooperatively sealing a tank fill pipe to prevent fluid splashage and vapor emission in which a valve mechanism with an operating linkage is preconditioned for valve mechanism operation upon fill pipe sealing and for valve mechanism de-actuation upon unseating intentionally or inadvertently.

3,710,832
LOCATORS FOR DRYWALL FASTENERS

Gary S. Lafferty, Sr., Milwaukee, Wis., assignor to Milwaukee Electric Tool Corporation, Brookfield, Wis.

Filed Aug. 9, 1971, Ser. No. 170,061
Int. Cl. B25b *23/08*
U.S. Cl. 144—32 4 Claims



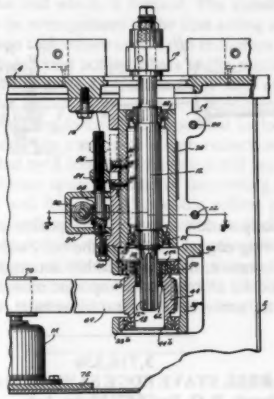
A locator assembly including a bit holder for driving screws to secure drywall panels on metal or wood studs has a locator sleeve provided with a nose having a vent design which includes an angularly outwardly sloping wall with a sharp edge to peel off the powder from the bit holder, and an angularly rearwardly sloping wall to dispel falling powder when screws are being inserted vertically.

3,710,833
POWER DRIVEN SHAPER APPARATUS

Ivan E. Hammer, 625 Ware Avenue, and Waldemar Hammer, P.O. Box 1393, both of Santa Rosa, Calif.

Filed Dec. 9, 1970, Ser. No. 96,442
Int. Cl. B27c *5/00*
U.S. Cl. 144—134 A 5 Claims

A shaper spindle and cutter are received in bearings in a hollow retaining quill and this assembly of parts is mounted for vertical adjustment in a shaper housing having a split cylindrical body suspended from the underside of an upright work table member. A special pulley housing attached at the lower end of the shaper housing contains a drive pulley isolated in vertically spaced bearings. The pulley is formed with a vertical spindle aperture in which is fixed a female spline drive element and within which is slidably supported a male spindle spline section. Stationary power driving means in the table

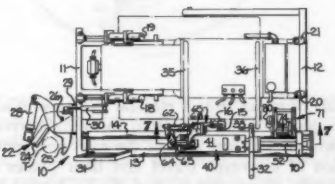


member carries a pulley belt which engages around the drive pulley in constant alignment and with radial load imposed by the tension of the belt being effectively taken up by the vertically spaced bearings without transfer of any appreciable part of the load to the spindle.

3,710,834
TREE HARVESTING APPARATUS AND METHOD

Walter Jarck, 306 Grady Drive, Rock Hill, S.C.

Filed Dec. 4, 1970, Ser. No. 95,031
Int. Cl. A01g *23/02*
U.S. Cl. 144—309 AC 14 Claims



A tree being harvested is severed by a shear and felled in a predetermined direction so as to be caught when the falling tree trunk reaches a generally horizontal position. The generally horizontal trunk of a felled tree is thereafter longitudinally advanced to the shear while having the limbs removed therefrom and, by movement of the shear to a generally vertical bucking position, severed into portions of desired predetermined length.

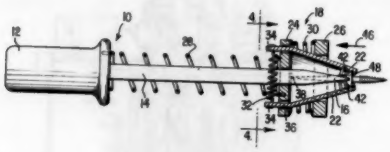
3,710,835
SCREWDRIVER WITH SCREW HOLDING ATTACHMENT

John B. Eby, 132 Electric Avenue, Milroy, Pa.

Filed July 9, 1971, Ser. No. 161,214
Int. Cl. B25b *23/08*
U.S. Cl. 145—52 7 Claims

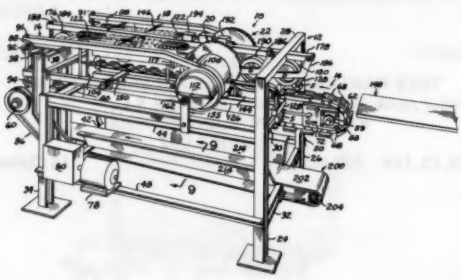
A conventional screwdriver is provided with a screw holding attachment which includes a screw gripping jaw assembly mounted on the shank of the screwdriver for compound move-

ment axially and radially thereof. Axial movement of the jaw assembly toward the bit end of the shank is effected simultaneously with a concomitant radial expansion of the screw gripping end of the jaw assembly as a function of a single



manual manipulation to permit the positionment of a screw head in driving engagement with the bit. Following such screw head positionment, the jaw assembly automatically undergoes a reversal of the aforestated compound movement to positively restrain the screw head against movement relative to the bit.

3,710,836
BARREL STAVE EDGE SAWING MACHINE
Bennie T. Busch, P. O. Box 543, Mena, Ark.
Filed Dec. 28, 1970, Ser. No. 101,569
Int. Cl. B27h *3/02*
U.S. Cl. 147—28 **3 Claims**

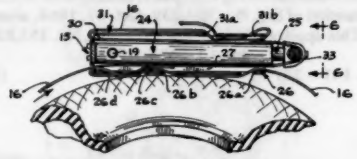


A pair of motor driven circular saws are mounted on opposite sides of a frame supported horizontal barrel stave carrying conveyor with the axes of the saws perpendicular to the direction of conveyor travel and their planes arranged in downwardly converging relation. Spring loaded guide rollers, forming a part of the saw driving motor supports, adjusts the position of the saws in a desired barrel stave edge trimming spaced-apart relation by contact with the respective opposing longitudinal sides of a barrel stave to be trimmed as it is moved by the conveyor between the saws.

Lock means actuated by spring loaded pressure rollers overlying the position of the barrel stave when moved by the conveyor maintains the adjusted spaced-apart relation of the saws for the duration of the saw trimming action on each side of each stave moved through the machine by the conveyor.

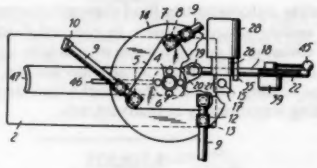
3,710,837
TIRE CONSTRICTOR
Oscar C. Blomgren, Sr., and Oscar C. Blomgren, Jr., both of Lake Bluff, Ill., assignors to Tuxco Corporation, North Chicago, Ill.
Filed Feb. 19, 1971, Ser. No. 116,910
Int. Cl. B60c *25/12*
U.S. Cl. 157—1.21 **12 Claims**

A device for constricting the diameter of a tubeless tire to facilitate the mounting on a wheel which includes a fluid powered ram having a body and piston extendible therefrom, a pump for driving the ram, and a flexible strap for circum-



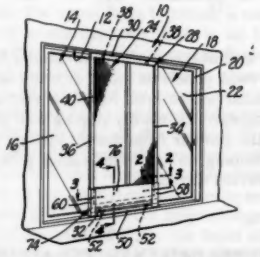
venting the tread surface of the tire, wherein the strap is attached at both ends to the ram and shortened in length by the ram to constrict the tire.

3,710,838
APPARATUS FOR GRIPPING A WHEEL TO PERMIT REMOVAL OF A TIRE
Victor Duquesne, 42 Quellinstrant, Antwerpen, Belgium
Filed Jan. 20, 1971, Ser. No. 108,043
Claims priority, application Belgium, Jan. 22, 1970, 49,840
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.24 **7 Claims**



An apparatus for gripping a wheel to permit the removal of a tire fitted on said wheel and includes means for displacing claws toward the periphery of a wheel of any diameter mounted on the apparatus and means for locking said claws towards the wheel.

3,710,839
ADJUSTABLE SLIDING SCREEN DOOR
Edward J. Andres, Santa Maria, Calif., assignor to Aluminite Manufacturing Company, Inc., Guadalupe, Calif.
Filed April 15, 1971, Ser. No. 134,220
Int. Cl. E06b *9/00*
U.S. Cl. 160—372 **4 Claims**

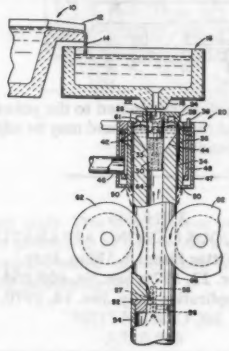


A sliding screen door adjustable as to height to accommodate upper and lower tracks having different vertical spacings. Channels telescoped over and slidable vertically on the lower ends of the stiles of the regular door frame are interconnected by an auxiliary lower rail carrying rollers which engage the lower track. The channels are fixed in their adjusted positions by screws threaded into the screen grooves of the stiles. Kick plates on opposite sides of the door cover the regular lower rail of the door frame.

3,710,840
METHOD FOR CONTINUOUS CASTING OF HOLLOW BAR

Andrew Lawrie Fabens, Jr., Shaker Heights, Ohio, assignor to Truline Casting Company, Wickliffe, Ohio

Continuation-in-part of Ser. No. 5,694, Jan. 26, 1970, abandoned. This application Nov. 3, 1971, Ser. No. 195,615
Int. Cl. B22d *11/08*
U.S. Cl. 164—73 15 Claims

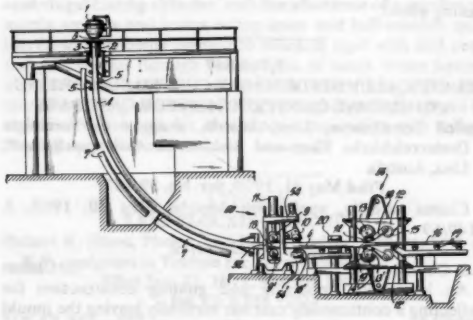


A method of casting a hollow bar which includes a mold having a mandrel therein and means for distributing molten material to the mold inlet in an area between the mold and the mandrel. Initially a starting plug closes the mold outlet to prevent leakage of the molten material and provides means to join the plug and solidified melt. After the molten material freezes in the annulus around the mandrel, the starting plug is lowered at a controlled rate to draw the solidified hollow bar from the mold outlet as additional molten material is fed through the inlet. An air inlet into the hollow of the cast bar prevents the formation of a vacuum within the hollow. Further, means are provided for cooling the mold to quickly freeze the molten material as it is fed into the mold. The starting plug includes structure for locking itself to the cast bar.

3,710,841
METHOD FOR CASTING AND ROLLING OF METAL STANDS FROM THE CASTING HEAT

Hans G. Baumann, Duisburg, Germany, assignor to Demag AG, Duisburg, Germany

Filed Dec. 19, 1969, Ser. No. 886,518
Claims priority, application Germany, Dec. 24, 1968, P 18 16 849.5
Int. Cl. B22d *11/12*
U.S. Cl. 164—76 2 Claims

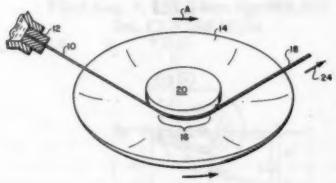


A method and apparatus for continuously casting metal in particular, steel rods, includes a continuous casting mold in which the rod is continuously cast and cooled to solidification as it is passed through the mold and moved through a transport path. The rod which is cast is subjected to a first set of up setting rolls and straightening rolls for reducing its cross section and for causing a stretching of the rod and a second set of high deformation rolls for further reducing the cross section and stretching the rod which is formed. The construction is characterized by an arrangement of the first acting sets of rollers at a first station to produce such a rod reduction and a rod stretching that the second acting rollers at the second station attain a maximum degree of deformation and at a faster passage rate of the rod which is cast and which therefore also requires a lower rolling force. The apparatus includes a roll stand for deforming the casting at a high reduction per pass which is preceeded by a roll stand having a roll gap which in the set in dependence upon the ratio of the casting cross section at the mold and the smallest possible rolling gap of the high deformation rollers. The construction is such that the casting cross section of the mold has a side ratio greater than 1 and the upsetting gap of the first roller set of approximately 1 and that of the high deformation stand of 1 or less than 1. The side ratio is the relationship of the side lengths with one another.

3,710,842
METHOD OF PRODUCING CONTROLLED LENGTH METAL FILAMENTS

Carroll E. Mobley, Columbus, and Robert E. Maringer, Worthington, both of Ohio, assignors to The Battelle Development Corporation, Columbus, Ohio

Filed Dec. 28, 1970, Ser. No. 101,899
Int. Cl. B22d *11/06*
U.S. Cl. 164—78 5 Claims



Streams of molten metal are converted into solidified metal filaments having point generatrix cross-sectional shapes by directing the stream into grooves formed into a moving chill-block surface. The grooves are shaped to form a mold of one surface of the point-generatrix shape and extend substantially in the direction of movement in the chill-block surface. The movement of the chill block is disposed to effect ejection of the solidified molten stream from the groove in the form of filaments by centrifugal force.

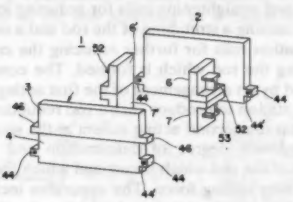
3,710,843
METHOD FOR ALTERING THE CROSS-SECTIONS OF CONTINUOUSLY CAST METAL PIECES

Tadashi Murakami; Takeshi Hiromoto; Zenzo Soejima, all of Himeji; Toyosaburo Hamano, Takasago; Shinsuke Hashimoto, and Shingo Shibamoto, both of Himeji, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 21, 1970, Ser. No. 99,809
Int. Cl. B22d *11/00*
U.S. Cl. 164—82 12 Claims

A method and a casting water cooled mold for altering the width dimension of a continuously cast metal piece during a continuous casting operation without the need of replacing the mold with different molds for producing cast pieces of different dimensions. The mold for carrying out the method has two water-cooled front walls and two water-cooled side walls,

each of which walls are press-fixable and releasable to and from each other and all but one of the front walls being



formed by two sections, said sections being movable in a horizontal direction and vertically press-fixable to each other.

3,710,844

METHOD OF PRODUCING SUPERCONDUCTING STRIPS

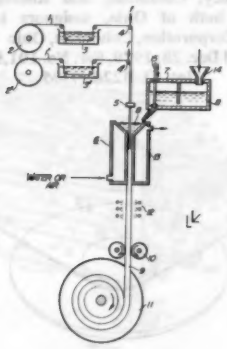
Toshio Doi, and Mitsuhiro Kudo, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 20, 1968, Ser. No. 706,924

Claims priority, application Japan, Feb. 24, 1967, 42/11415

Int. Cl. B22d *11/00*

U.S. Cl. 164—86 **2 Claims**



A method of producing a superconducting strip, comprising continuously passing a superconducting wire or tape through a mold, casting a molten stabilizing metal for said wire into said mold, cooling the molten stabilizing metal during its passage through said mold along the travelling path of said wire with said wire embedded therein to thereby solidify said molten stabilizing metal in close contact with said wire and continuously drawing the resultant superconducting strip from said mold; and an apparatus for practicing said method. The superconducting strip produced according to the present invention is free from breakage of the wire, has highly uniform and excellent properties and can be produced at lower cost than the conventional ones.

3,710,845

ADJUSTABLE CONTINUOUS CASTING MOLD

Max Burkhardt, Zurich, and Armin Thalmann, Uster, both of Switzerland, assignors to Concast AG, Zurich, Switzerland

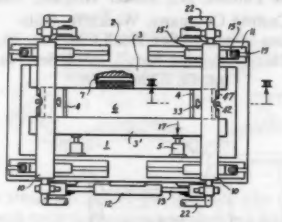
Filed March 24, 1971, Ser. No. 127,593

Claims priority, application Switzerland, March 25, 1970, 4478/70

Int. Cl. B22d *11/06*

U.S. Cl. 164—273 **9 Claims**

A plate mold for continuous casting machines in which transverse mold walls are carried on yokes which straddle the longitudinal walls and are slidably supported on a frame which surrounds the mold. The transverse walls may be shifted to various positions of adjustment by power operated means



mounted on the side walls connected to the yokes. The transverse walls are hinged to the yokes and may be adjusted to any desired angle of inclination.

3,710,846

CONTINUOUS CASTING APPARATUS

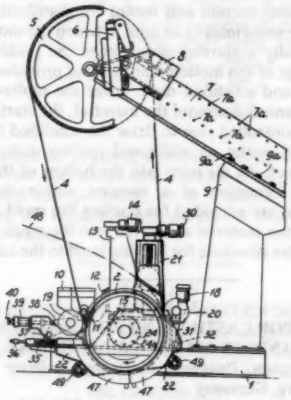
Ilario Properzi, Via Vittor Pisani 8, Milan, Italy

Filed Dec. 22, 1970, Ser. No. 100,654

Claims priority, application Italy, Jan. 14, 1970, 1935 A/70

Int. Cl. B22d *11/06*

U.S. Cl. 164—278 **11 Claims**



A continuous casting apparatus having a rotating grooved casting wheel cooperating with a continuous rib wound on the said casting wheel, a support unit connected to the said casting wheel and securable to said apparatus at a number of angular positions for positioning a crucible at the periphery of the said casting wheel.

3,710,847

ELASTICALLY DEFORMABLE CURVED SUPPORTING AND GUIDING CONSTRUCTION FOR CAST BARS

Rudolf Schoffmann, Linz, Austria, assignor to Vereinigte Oesterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed May 21, 1970, Ser. No. 39,457

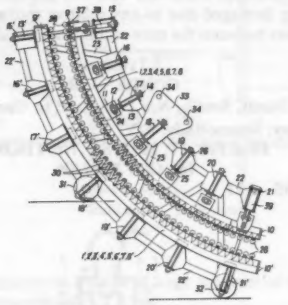
Claims priority, application Austria, May 30, 1969, A 5149/69

Int. Cl. B22d *11/12*

U.S. Cl. 164—282 **10 Claims**

An improved supporting and guiding construction for deflecting a continuously cast bar vertically leaving the mould into the horizontal direction. The novel construction comprises at least two inner and two outer, roll-supporting, curved, longitudinal carriers mounted in a stationary curved

frame-work composed of spaced-apart frame carriers having rigid connections, said inner or outer longitudinal carriers, or both, being adjustable and adapted to be urged towards said frame work under elastic deformation by adjusting means act-



ing upon their ends. This arrangement ensures that the rolls are always so positioned as to provide a continuous path following a predetermined curve, thus avoiding any undue stressing of the solidifying bar.

3,710,848

CENTRIFUGAL CASTING DEVICES

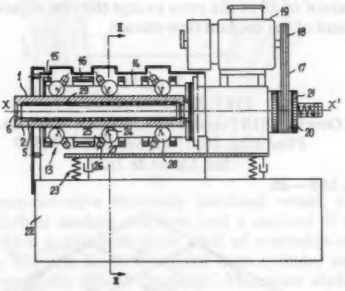
Henri Peltier; Roger Bailly, and Pierre Chatourel, all of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France

Filed Aug. 16, 1971, Ser. No. 172,005

Claims priority, application France, Sept. 8, 1970, 7032600

Int. Cl. B22d *13/10*

U.S. Cl. 164—293 **9 Claims**



Centrifugal casting device, notably for tubular pieces without longitudinal draw, by means of half-moulds kept in their assembled condition during the casting operation in a centrifugal casting cylinder, with the assistance of a number of inertia weights and levers acting upon said half-moulds, said inertia-weights being pivoted to brackets rigid with said centrifugal cylinder through the medium of crank levers having unequal arms, the major arms of said levers being rigid with said inertia weights and extending through openings formed in said centrifugal cylinder, the minor arms ending with rollers bearing upon said half-moulds.

3,710,849

LENS BLOCKING MACHINE

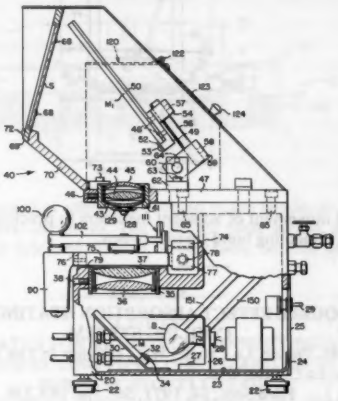
Robert R. Hines, Phelps, and Harold Culver, Geneva, both of N.Y., assignors to Textron Inc., Providence, R.I.

Filed Jan. 21, 1971, Ser. No. 108,432

Int. Cl. B22d *17/24*

U.S. Cl. 164—322 **5 Claims**

Two lens holders mounted on a sliding table, which can be slid first right and then left to bring the lenses successively into position to be observed through a centrally disposed projection lens system and screen to correctly align them. After alignment each lens is clamped by an arm which carries a mold, and the table is shifted to bring the lens under the pour



spout of a melting pot, and the mold is filled with a measured amount of alloy to mold a lens block onto the lens. While one block is being molded onto a lens at one pour station, another block is being allowed to cool to permit its removal from the table with the lens to which it has been molded.

3,710,850

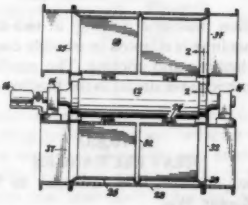
UNRESTRAINED ROTOR

Hermann E. Kurschner, and Robert Emmett Mahoney, both of Wellsville, N.Y., assignors to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Aug. 4, 1971, Ser. No. 168,877

Int. Cl. F28d *19/04*

U.S. Cl. 165—9 **9 Claims**



A rotor structure for a rotary regenerative heat exchanger is defined wherein the rotating elements of a rotor subject to differential thermal expansion and to a concentration of stresses that effect cracking and failure of the usual welded joints therebetween are replaced by pivotal connections that allow relative movement sufficient to accommodate thermal expansion and thus preclude structural failure.

3,710,851

BALL-AND-SOCKET COUPLING FOR ROTOR

Harlan E. Finnemore, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

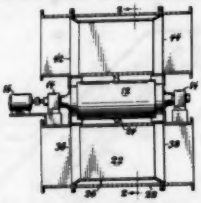
Filed Aug. 19, 1971, Ser. No. 173,212

Int. Cl. F28d *19/04*

U.S. Cl. 165—9 **7 Claims**

An arrangement by which sector-shaped baskets containing heat absorbent elements of a rotary regenerative heat

exchanger are pivotally connected to a central rotor post by ball-and-socket type joints that permit relative distortion and



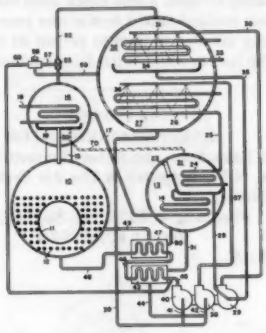
limited movement of adjacent members to preclude breakage of the connecting bond therebetween.

3,710,852

DOUBLE EFFECT ABSORPTION HEATING AND COOLING SYSTEM

James M. Porter, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Sept. 24, 1971, Ser. No. 183,336
Int. Cl. F25b *13/00*
U.S. Cl. 165—62 **9 Claims**



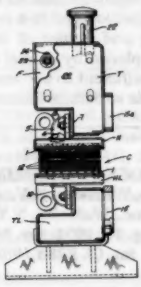
An absorption machine having a two-stage generator, wherein the machine is adapted to provide cooling, heating or simultaneous heating and cooling. The machine includes an improved hermetic valve useful in the heating mode.

3,710,853

HEAT EXCHANGER

Fred M. Young, Racine, Wis., assignor to Young Radiator Company, Racine, Wis.

Filed March 24, 1971, Ser. No. 127,616
Int. Cl. F28f *7/00*
U.S. Cl. 165—81 **6 Claims**



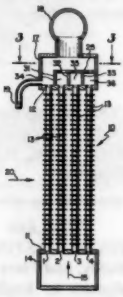
A heat exchanger such as a radiator or other cooling machine which utilizes an inlet fluid tank and an outlet fluid tank having a heat exchanging core located therebetween and in fluid communication therewith, and in which the tanks and core are mounted within a main frame. One of the tanks is fixed to the frame while the other is mounted on the frame for relative movement therewith whereby the core is prevented from being damaged due to any relative movement as sometimes occurs between the core and the main frame.

3,710,854

CONDENSER

Fred W. Staub, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 17, 1971, Ser. No. 116,067
Int. Cl. F28b *1/06*
U.S. Cl. 165—111 **7 Claims**



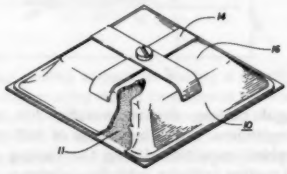
In a surface condenser of the upflow type including a plurality of parallel tubes arranged in a plurality of parallel rows between an inlet and an outlet manifold for condensing a vaporous medium by a stream of coolant, freeze-up of the tubes is prevented and improved performance is provided by selectively throttling the fluid flow from the tubes at the outlet ends thereof of all of the rows except the row adjacent the upstream end of the coolant flow stream.

3,710,855

FIRE EXTINGUISHER

George Osorio, 5818 Peoples Ave., New Orleans, La.

Filed Aug. 10, 1971, Ser. No. 170,539
Int. Cl. A62c *7/00*
U.S. Cl. 169—26 **1 Claim**



A quickly burning saucer containing a fire extinguishing powder sealed therein by a cover and in combination with cross arms centrally fastened together by a screw that also functions to securely attach the saucer and arms to structure over highly flammable areas such as gas tanks and engines of automobiles, deep fat fryers of restaurants, etc.

3,710,856

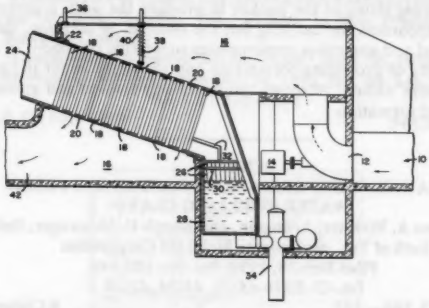
LOW TEMPERATURE RISE CONDENSER AND PUMP PACKAGE

William E. Palmer, Easton, Pa., and William E. Jones, Washington, N.J., assignors to Ingersoll-Rand Company, New York, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,067
Int. Cl. F28b *9/10*
U.S. Cl. 165—113 **3 Claims**

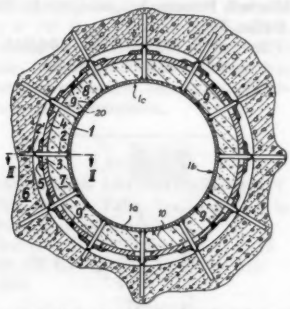
A low temperature rise condenser and pump system combining condensers and pumps with a siphon-type water circuit.

The arrangement achieves a low temperature gradient in the



cooling water circuit by the use of large volumes of water with a low energy expenditure.

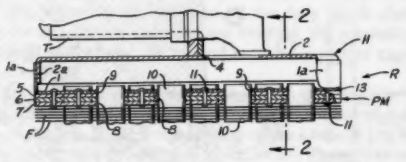
3,710,857
PRESSURE-RETENTIVE VESSEL, E.G. FOR PRESSURIZED-FLUID NUCLEAR REACTORS
Joachim Meyer, and Josef Pfeffer, both of Essen, Germany, assignors to Fried. Krupp GmbH, Essen, Germany
Filed May 4, 1970, Ser. No. 34,081
Int. Cl. F28f *3/12*
U.S. Cl. 165—169 **6 Claims**



A pressure-retentive thermally insulated vessel, e.g., for pressurized-fluid nuclear reactors, and a method of making same in which a thin-wall inner shell of corrosion-resistant metal (e.g. stainless steel) is welded from cylinder segments into a hermetically closed container. The outer shell of the double-wall lining, whose interwall space is filled with a force-transmitting thermally insulating material (e.g. a low heat-conductivity concrete), is welded together of cylinder segments of heavy-gauge steel. To support the inner wall, a plurality of radial angularly and axially spaced tie rods are welded to the outer surface of the thin inner vessel, passed through openings in the outer wall, and engage in the surrounding body of concrete serving as the outer support and radiation-shielding mass. The openings are sealed by welding and the rods are rigidly fixed to the outer wall, e.g. via bridge plates overlying the openings.

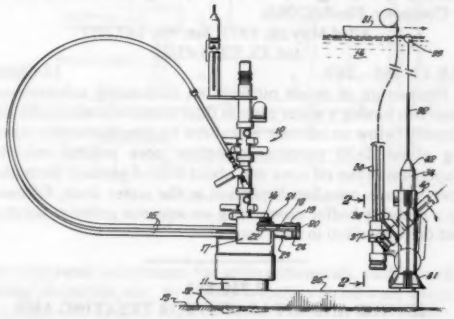
3,710,858
HEAT EXCHANGER HEADER AND CORE CONSTRUCTION
Fred M. Young, Racine, Wis., assignor to Young Radiator Company, Racine, Wis.
Filed March 24, 1971, Ser. No. 127,617
Int. Cl. F28f *9/04*
U.S. Cl. 165—178 **8 Claims**

A heat exchanger such as a radiator having a fluid header with a plurality of holes in one of its walls. Plate means, comprised of any number of plates, are parallel with and abut against the wall and the plate means also have holes aligned with the holes in the header. Tubes extend both through the plate means and through the header wall, and the tubes are



soldered, brazed or otherwise secured to the header to form a leakproof joint therewith. The wall, the plate means, and the tubes are all soldered, brazed or otherwise bonded or fused together.

3,710,859
APPARATUS FOR REMOTELY CONNECTING AND DISCONNECTING PIPE LINES TO AND FROM A SUBMERGED WELLHEAD
James W. E. Hanes, Ventura; Edward Larralde, Santa Barbara, both of Calif., and Michael J. Rimmer, Amersham, Bucks, England, assignors to Vetco Offshore Industries, Inc., Ventura, Calif.
Filed May 27, 1970, Ser. No. 41,023
Int. Cl. E21b *43/01*
U.S. Cl. 166—.6 **12 Claims**

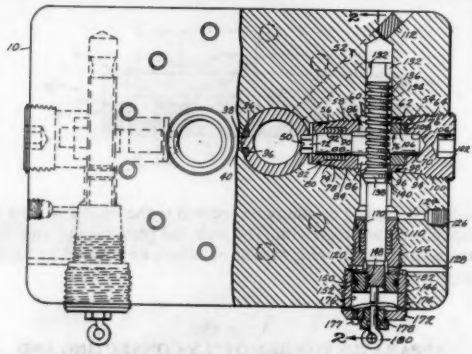


One or a bundle of pipe lines are lowered from a floating vessel or barge along guide lines to a Christmas tree on a wellhead assembly at the ocean floor, the one or more pipe lines being aligned with flow lines extending from the Christmas tree. A connector and associated actuating mechanism are lowered on a running string from the barge along the guide lines to a position between the aligned pipe lines and flow lines, after which the connector, pipe lines and flow lines are hydraulically axially shifted into sealed and locked relation by remote control from the barge, the actuating mechanism being released from the connector and elevated to the barge on the running string. When desired, the running string and actuating mechanism may be relowered and operatively reconnected to the connector to release the latter from the flow lines and pipe lines.

3,710,860
PETROLEUM WELL SAFETY VALVE
Marvin L. Holbert, Jr., Houston, Tex., assignor to Gray Tool Company, Houston, Tex.
Filed July 30, 1971, Ser. No. 167,784
Int. Cl. E21b *33/00*
U.S. Cl. 166—75 **34 Claims**

Preferably installed in the well head, the valve incorporates a differential pressure-operated piston exposed to a fluid pres-

sure supply on one side for maintaining the valve in an open condition when desired and exposed to subterranean pressures on the opposite side, so that when the subterranean pressure rises above a predetermined amount the valve closes. The



valve may be economically installed in existing wells, e.g. offshore dual wells on multiple well platforms to provide internal blowout and anti-fire protection for wells which presently have no effective positive closure for shutting in the well in an emergency, such as an incipient blowout or a fire.

3,710,861

MISCIBLE-TYPE FLOODING OF OIL RESERVOIRS HAVING WATER SATURATED BOTTOM ZONES

David J. Ver Steeg, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed May 26, 1971, Ser. No. 147,257
Int. Cl. E21b *43/22*
U.S. Cl. 166—269 **12 Claims**

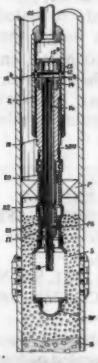
Production of crude oil from an oil-bearing subterranean reservoir having a water zone in fluid communication with and directly below an oil zone is realized by simultaneously injecting about 1–20 percent formation pore volume micellar dispersion in the oil zone and about 0.01–5 percent formation pore volume micellar dispersion in the water zone, followed by a mobility buffer comprising an aqueous polymer solution and drive medium in both zones.

3,710,862

METHOD AND APPARATUS FOR TREATING AND PREPARING WELLS FOR PRODUCTION

Carter R. Young, Carrollton, Tex., and Henry J. James, Dallas, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed June 7, 1971, Ser. No. 150,349
Int. Cl. E21b *43/04, 43/10, 43/14*
U.S. Cl. 166—278 **19 Claims**



A method and apparatus for setting a packer supporting a screen, treating the well to stimulate production from the formation or for other purposes, gravel packing the well bore around the screen, all without removing the setting string from the well bore, then removing the setting string and installing a producing string in the packer to produce the well; together with apparatus for carrying out the method. In addition, the method and apparatus contemplates successive treatment of a plurality of producing formations one above the other in the well bore without affecting the previously treated and gravel packed formation.

3,710,863

TREATMENT OF FORMATIONS CONTAINING FRESH-WATER SWELLING CLAYS

William A. Webster, Arlington, and Joseph U. Messenger, Dallas, both of Tex., assignors to Mobil Oil Corporation

Filed Dec. 28, 1970, Ser. No. 102,146
Int. Cl. E21b *43/22, 43/24, 43/25*
U.S. Cl. 166—272 **8 Claims**

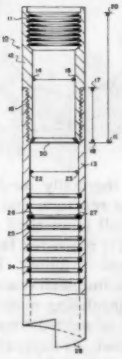
This specification discloses a method of treating subterranean formations that contain fresh-water swelling clay materials and oil and water. A solution of metal halide salt, wherein the metal has an atomic weight of more than 24, dissolved in a miscible solvent is injected into the formation via a well communicating with the surface and penetrating the formation. This solution may be injected into the formation either prior to, concurrent with, or subsequent to the injection of an aqueous fluid into the formation.

3,710,864

WELL TUBING TIE BACK METHOD AND APPARATUS

Rayford E. Mitchell, Houma, La., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 5, 1971, Ser. No. 104,041
Int. Cl. E21b *29/00, 43/00*
U.S. Cl. 166—277 **3 Claims**



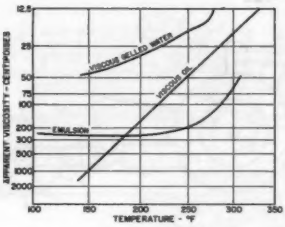
A tool adapted for insertion in a tubing string in oil and gas wells is sized for fitting over and sealingly connecting the tool to a parted tubing string already in the well whereby leakproof fluid communication can be established in the reconstructed tubing string. Especially designed for reestablishing communication with tubing that has been parted, for example as with a mechanical or chemical tubing cutter, the lower inner section of the tool has a plurality of spaced rubber O-rings to provide a first sealing action and a reduced internal diameter above the O-rings for establishing a beveled metal-to-metal seal with the previously parted tubing. The upper section of the tool is threaded for connection to the upper string of tubing while the lower end of the tool has a cut lip guide for scooping the parted tubing end into the receptacle lower section of the tool containing the sealing members. In an alternative embodiment, an additional resilient seal aids in providing an additional sealing effect for the beveled metal-to-metal seal.

3,710,865

METHOD OF FRACTURING SUBTERRANEAN FORMATIONS USING OIL-IN-WATER EMULSIONS

Othar M. Kiel, Houston, Tex., assignor to Esso Production Research Company

Continuation-in-part of Ser. No. 76,887, Sept. 30, 1970, abandoned. This application May 24, 1971, Ser. No. 146,349
Int. Cl. E21b 43/26
U.S. Cl. 166—308 34 Claims



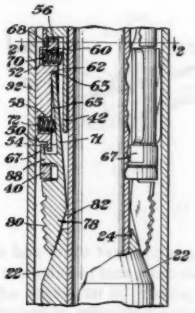
A fracturing method wherein an improved oil-in-water emulsion is injected into a subterranean formation under sufficient pressure to open a fracture in the formation and constituents of the emulsion are thereafter produced from the formation. The emulsion contains a major volume proportion of an internal liquid hydrocarbon phase and a minor volume proportion of an external water phase containing a water-dispersible polymeric thickening agent in a concentration sufficient to provide the water phase with an apparent viscosity of at least 10 centipoises at 70° F and a shear rate of 511 reciprocal seconds. The emulsion is formulated so that the internal oil phase constitutes more than 50 but not more than about 80 volume percent, and preferably between about 60 and about 75 volume percent, of the emulsion.

3,710,866

DRAG BLOCK AND SLIP ASSEMBLY

Charles A. Pitts, Wichita Falls, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed June 21, 1971, Ser. No. 154,955
Int. Cl. E21b 23/06, 33/129, 43/10
U.S. Cl. 166—216 5 Claims



This invention relates to a slip and drag block assembly for use with a packer or bridge plug, for example, in the casing of an earth well.

The drag block elements are spring loaded and held within a slotted tubular cage member which is a casting. The slip elements, spring loaded, are pivoted from the drag block elements and are held in position by the tubular cage. Setting of the slips is by movement of the cone assembly of the packer or bridge plug, for example.

Insertion of the drag block elements into the cage is accomplished by means of a rotatable tubular ring contiguous to the drag block end of the cage and having a notch in its end facing the cage whereby each drag block element is inserted in a slot in the cage as the notch in the rotatable ring is aligned therewith. The notch is then successively rotated to the next cage slot assembly for insertion of the drag block element. After the drag block elements are inserted, the rotatable ring is secured with the notch located between a pair of cage slot arrays.

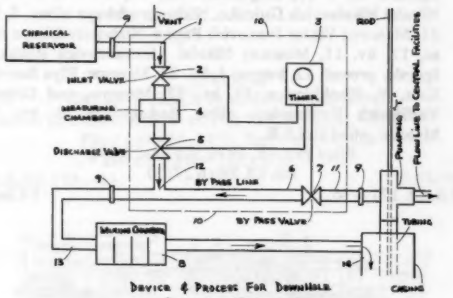
Because the slip elements are pivoted from the drag block elements, the outward movement required to set the slips is the same regardless of the weight rating of the nominal size of the casing used, thus providing a more nearly equal bite of the teeth in the casing wall than would occur if the slip elements were pivoted from the cage.

3,710,867

APPARATUS AND PROCESS FOR ADDING CHEMICALS

Paul L. Bansbach, St. Louis, Mo., assignor to Petrolite Corporation, Wilmington, Del.

Filed Jan. 13, 1971, Ser. No. 106,171
Int. Cl. E21b 43/00, 33/03
U.S. Cl. 166—244 C 5 Claims



An apparatus and process for adding chemicals, such as well treating chemicals, etc., to a system, such as an oil well, which comprises:

1. a chemical inlet valve capable of connection to a chemical reservoir;
2. a container connected to (1) for holding a measured amount of chemical;
3. a chemical discharge valve for (2); (1), (2) and (3) being in gravity relationship;
4. a fluid inlet valve connected to a fluid flow line, such as a by-pass line which, is connected to a flow line, such as from an oil well, and connected to (3), and an exit flow line therefrom;
5. a timer which synchronizes the operation of said valves so that a measured amount of chemical enters the system and is flushed by fluids through the by-pass line of (4) into the system such as a well.

The apparatus and process can also be adapted to other systems where automatic addition of chemicals is required.

3,710,868

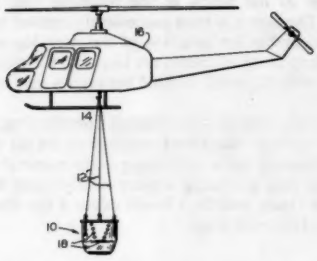
AIRCRAFT SUSPENDED BUCKET FOR FIRE FIGHTING

Russell D. Chadwick, Beaverton, Oreg., assignor to Chadwick, Incorporated, Beaverton, Oreg.

Filed Jan. 27, 1971, Ser. No. 110,101
Int. Cl. A62c 3/00
U.S. Cl. 169—2 A 9 Claims

A bucket, for suspension from the cargo hook of a

helicopter, is provided with a plurality of valves and valve actuating means presenting a low profile and compact construc-



tion. The valve actuating means depend from arms extending inwardly from the bucket sides.

3,710,869

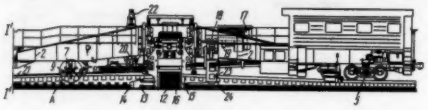
MACHINE FOR CLEANING BALLAST IN RAILWAY TRACK

Izrail Leibovich Funberg, ulitsa Krasnogorskaya, 30, kv. 21, Ljubertsy Moskovskoi oblasti; Petr Petrovich Nikolaev, Baikalskaya ulitsa, 33, korpus 2, kv. 71, Moscow; Viktor Epifanovich Goro, Rogozhshy val, 17, kv. 54, Moscow; Nikolai Nikolaevich Gulenko, Nizhegorodskaya ulitsa, 3, kv. 31, Moscow; Viktor Ivanovich Papko, Nizhegorodskaya ulitsa, 17, kv. 11, Moscow; Nikolai Alexandrovich Rozhkov, Igarsky proezd, 12, korpus 1, kv. 22, Moscow; Elya Isaevich Kats, V. Khokhlovka, 33, kv. 27, Moscow, and Grigory Vasilievich Krutogolov, ulitsa Raduzhnaya, 8, kv. 16, Moscow, all of U.S.S.R.

Filed Jan. 15, 1970, Ser. No. 2,990

Int. Cl. E01b *27/00*

U.S. Cl. 171—16 **1 Claim**



A machine for cleaning ballast in railway tracks having a track lifter and devices for cutting-off and cleaning ballast, positioned under the track during the course of lifting the latter, comprising a shaft disposed ahead said devices for cutting-off and cleaning ballast in the transverse direction relative to that of the machine movement and having turnable sleeves successively mounted thereon and equipped with pushers radially disposed thereon and introduced inbetween the ties of the track to push through the ballast stuck therein.

3,710,870

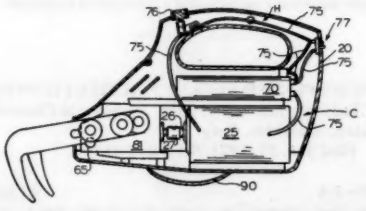
CORDLESS ELECTRIC HAND TILLER

Norman O. Pfeiffer, Rydal, Pa., assignor to Little Wonder, Inc., Southampton, Pa.

Filed Aug. 19, 1971, Ser. No. 173,030

Int. Cl. A01d *27/00*

U.S. Cl. 172—40 **7 Claims**



A portable, battery operated tiller is adapted to be held in the hand and incorporates a plurality of replaceable digger elements or tines driven through a mechanism which gives the digger elements a motion designed to simulate manual tilling.

3,710,871

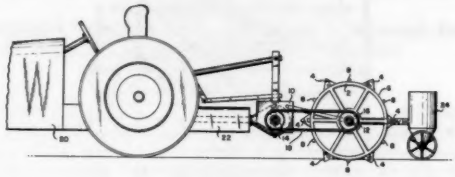
ROTARY FURROWING TOOL

Emmons F. Hill, deceased, late of Route 4, Knoxville, Tenn. (Frank L. Hill, administrator)

Filed Dec. 21, 1970, Ser. No. 99,825

Int. Cl. A01b *33/00*

U.S. Cl. 172—122 **6 Claims**



An improved rotary furrowing tool is disclosed including a cylindrical rim, cutting blade means for cutting a vertically arranged longitudinal slit in the earth's surface, and dig-out tooth means for pulverizing and removing the soil adjacent the slit. The cutting blade means includes at least one blade secured to the rim adjacent one lateral edge, said blade extending radially outwardly beyond the peripheral surface of the rim. The dig-out tooth means comprise circumferentially arranged teeth that extend radially outwardly from the peripheral surface of the rim a distance less than the extremity of said cutting blade means. The disclosed arrangement is particularly suitable for forming a furrow in unplowed ground.

3,710,872

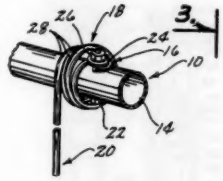
GROUND ENGAGING IMPLEMENT TOOTH AND MOUNTING MEANS THEREFOR

Henry L. Kovar, Anoka, Minn., assignor to John R. Kovar Mfg. Co., Inc., Anoka, Minn.

Filed Aug. 11, 1970, Ser. No. 62,819

Int. Cl. A01b *23/02*; **A01d** *77/00*

U.S. Cl. 172—707 **4 Claims**



A ground engaging implement tooth and mounting means therefor comprising an elongated rod element having opposite ends and having a portion of its length adjacent one end formed into a coil having a plurality of convolutions disposed on a horizontal axis. The end of the rod adjacent the coil terminates in an anchor portion which is adapted to be secured to an implement frame by means of an anchor bolt extending therethrough. The other end of the rod extends away from the last convolution on the other end of the coil in a vertical direction to form a straight ground engaging portion. The convolutions of the coil decrease in diameter from the anchor portion to the ground engaging portion so that deflection of the ground engaging portion will tend to be resiliently absorbed in the coil by more than the last convolution thereof and so that the ground engaging portion will normally be free from engagement with an implement frame upon deflection of the ground engaging portion.

3,710,873

IMPACT WRENCH OR SCREWDRIVER

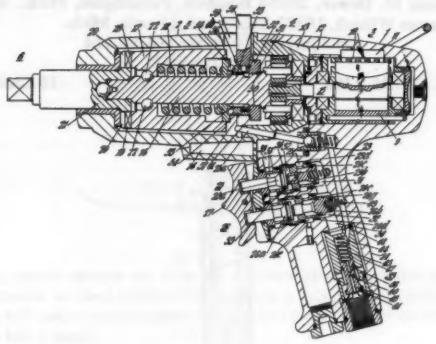
Michael George Allen, North Watford, England, assignor to Desoutter Brothers Limited, London, England

Filed Dec. 7, 1970, Ser. No. 95,772

Claims priority, application Great Britain, Dec. 8, 1969, 59,836/69

Int. Cl. B25b *19/00*

U.S. Cl. 173—12 3 Claims



A pneumatically operated hand-held impact wrench or screwdriver having a hammer member which reciprocates against the action of a spring, said spring being adjustable to vary the value of maximum torque at which the tool operates.

3,710,874

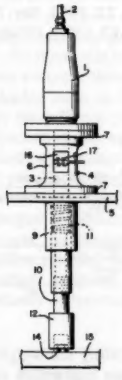
ELECTRONIC TORQUE MEASUREMENT SYSTEM

Robert J. Seccombe, Detroit, Mich.; Paul M. Pyper, Dusseldorf-Lohauser, Germany, and Edwin S. Treible, Jr., Ringoes, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed March 10, 1971, Ser. No. 122,783

Int. Cl. B25b *23/14*

U.S. Cl. 173—12 5 Claims



A wrenching and torque inspection apparatus including a rotary power wrench having its housing fixed to a support by a resilient member forming part of an electronic torque measuring system for measuring the reaction torque load on the wrench housing. The torque measurement signal is used to operate an indicator, such as a light, recorder and may be used to stop the wrench at a predetermined value of torque.

3,710,875

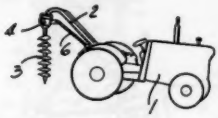
DOWN PRESSURE ASSEMBLY FOR TRUCK MOUNTED AUGER

Louis E. German, Princeville, Ill., assignor to Morton Buildings, Inc., Morton, Ill.

Filed Feb. 18, 1971, Ser. No. 116,517

Int. Cl. E21c *11/02*

U.S. Cl. 173—28 5 Claims



A down pressure assembly for use in combination with a boom pivoted adjacent one end to a truck or similar vehicle and carrying on its free end a depending auger. The assembly includes a frame carrying means to apply additional downward pressure to the boom to force the auger to bore through frozen ground or some other equally hard substance to insure positive action of the auger.

3,710,876

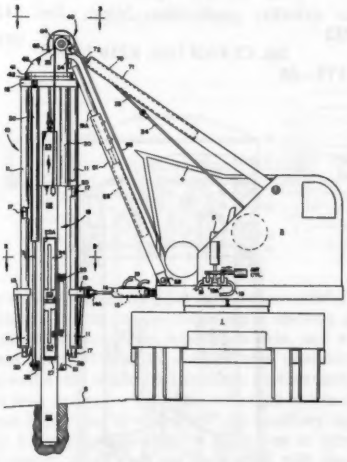
GROUND HOLE FORMING MACHINE

Vernon E. Christensen, P. O. Box 728, Yoncalla, Oreg.

Filed April 16, 1971, Ser. No. 134,762

Int. Cl. E21b *11/02*; E21c *11/02*

U.S. Cl. 173—43 7 Claims

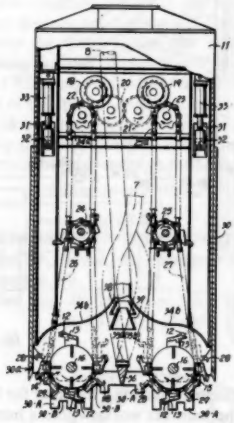


A machine is disclosed having a hammer for impact forming a ground hole. The hammer works within a hammer guide the lower end of which may be biased into ground penetration during hole forming to serve as a casing. The hammer guide assembly is slidably carried within an elongate framework which is positionable to the side of a vehicle for hole forming along roadways. Support means adjustably suspends the framework to position same over the hole site. Positioning cylinders move the lower end of the framework into place. Locking means prevents undesired framework movement during hammer operation.

3,710,877
AUGER DEVICE
Harry Michasiw, c/o Harry's Fina Service, Chelmsford, Ontario, Canada
Filed July 13, 1971, Ser. No. 162,203
Int. Cl. F25c 5/04; E21c 13/04
U.S. Cl. 175—18 2 Claims

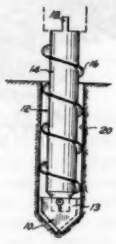
An auger made in at least two and preferably three parts, which can be made compact for transportation and storage by sliding one bit portion down over the other. A screw member of each bit portion projects through a helical slot in each bit portion outside it. In operation, the bit portions are disengaged and connected end-to-end by means of separate shafts so that the screw members form continuations of each other.

3,710,878
CHAIN CUTTER TYPE EXCAVATOR AND DITCH EXCAVATING METHOD
Masaaki Endo, Ohmiya; Mituo Miura, and Mamoru Shinozaki, both of Tokyo, all of Japan, assignors to Takenaka Komuten Company, Ltd., Higashi-ku, Osaka-fu, Japan
Filed Dec. 4, 1970, Ser. No. 95,037
Claims priority, application Japan, Dec. 13, 1969, 44/100752
Int. Cl. E02f 5/06; E21b 11/06
U.S. Cl. 175—66 7 Claims



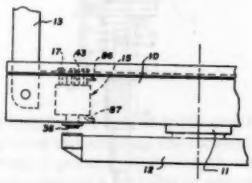
An excavator is provided with a box type casing including a pair of rotary cutters mounted on the bottom portion of the casing; blades provided at the outer periphery of the cutters provide excavating action with soil so excavated being discharged through a discharging tube having a sucking port around the rotary cutters; further provision being made for slide cutters on the periphery of the casing. In operation the inter action of the rotary cutters provides discrete and alternate ditch bores whereafter the areas between the ditch bores are excavated to form a ditch of desired length and width.

3,710,879
DRILLING APPARATUS
Donald M. Dewar, 29554 Hemlock, Farmington, Mich., and James Wilseck, 18332 Brentwood, Livonia, Mich.
Filed July 24, 1970, Ser. No. 58,114
Int. Cl. E21b 9/22
U.S. Cl. 175—388 10 Claims



A drilling apparatus, especially for boring holes in the earth, having a drill as an integral unit including a first portion for starting the hole, a second portion for reaming the hole, and a third portion for maintaining the hole cylindrical. The drill is selectively fastened to a conventional auger. Extension plates may be attached to the third portion for drilling holes of different diameters. As an alternate embodiment, the first portion of the drill may include an auger, the drill and the auger being formed from a flat stock.

3,710,880
LOAD WEIGHT INDICATING APPARATUS
John Arden, 6049 Portland Street, British Columbia, Canada
Filed Oct. 22, 1971, Ser. No. 191,738
Int. Cl. G01g 19/08, 5/04
U.S. Cl. 177—137 13 Claims



Apparatus for indicating the weight of the load of a transport vehicle and having a plurality of units located between the load frame and support frame of the vehicle, each unit including a piston slidable in a cylinder, means for supplying pressure fluid to move the pistons to lift the load frame, means for by-passing fluid out of each cylinder when the load has been lifted, valve means for cutting off the supply means at this time, and a pressure indicator connected to the supply means between the valve and the cylinder of each unit to indicate the load when the by-pass has been cut-off.

3,710,881

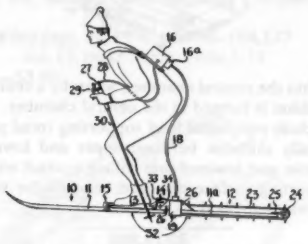
POWER SKI

Richard F. Thompson, Glen Ellyn, Ill., assignor to Royce Hill Husted, Wheaton, Ill. and Samuel Shiber, Chicago, Ill.

Continuation-in-part of Ser. No. 828,968, May 29, 1969, Pat. No. 3,645,348. This application Nov. 5, 1971, Ser. No. 196,136

Int. Cl. B62m *27/00*

U.S. Cl. 180—5 R **2 Claims**



A power driven ski with an anterior sliding portion and posterior toothed endless belt portion, a motor for propelling the belt and control means attached to a ski pole for regulating the belt's speed.

3,710,882

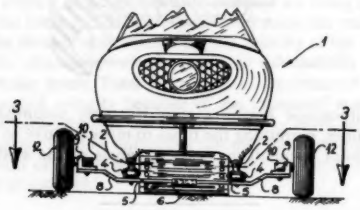
FRONT WHEEL STEERING ASSEMBLY

Rene Marceau, Honfleur, Bellechasse, Quebec, Canada

Filed Nov. 23, 1970, Ser. No. 92,051

Int. Cl. B62d *55/02*

U.S. Cl. 180—9.38 **8 Claims**



A front wheel steering assembly particularly constructed and arranged to replace the front skis of snowmobiles to adapt the latter for use on other surfaces than ice and snow, but also applicable to other vehicles such as farm tractors. A front wheel steering assembly including a pair of parallel resilient blades having their adjacent outer ends pivotally interconnected by a pair of wheel supporting members to form with the latter an articulated parallelogram frame, and at least one connecting element pivoted at one point of each of the resilient blades and arranged to be fixed to a steering axle for rotation therewith to cause reciprocating movement of the resilient blades in opposite parallel directions lengthwise of each other and a resultant steering, in the same angular direction, of the two wheels supported by the pair of wheel supporting members.

3,710,883

FOLDING MOTORCYCLE OR THE LIKE

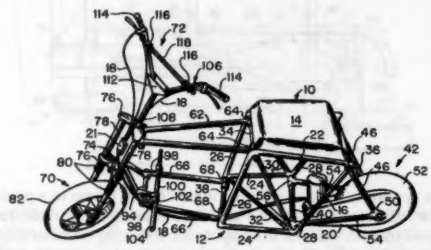
Pantaleone L. Rizzo, 97-15 72nd Drive, Forest Hills, N.Y.

Filed Oct. 22, 1971, Ser. No. 191,939

Int. Cl. B62d *3/00*

U.S. Cl. 180—33 **9 Claims**

An extremely compact, low cost, folding motorcycle or motor scooter is provided by means of a novel, rod-like construction. A frame-like chassis defines a compartment for receiving the front and wheel assembly in the folded condition. Portions of the chassis are removable for this purpose. Other portions of the chassis provide pivot means for the front and rear wheel assemblies. The pivot means are skewed at an angle with respect to an axis transverse to the longitudinal axis of the motorcycle so that the front and rear wheel assemblies bypass each other and are in side-by-side relationship in the folded condition. An internal combustion engine is used for



the drive means with the seat of the motorcycle preferably being at least partially hollow in order to define a fuel tank. The handle-bar assembly is foldable and is removably keyed to the steering means.

The aforementioned abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,710,884

MOTOR VEHICLE, ESPECIALLY PASSENGER MOTOR VEHICLE

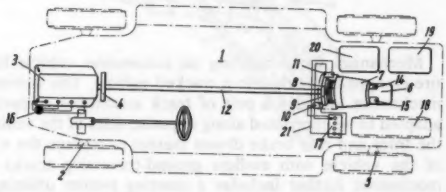
Ferdinand K. Piech, Stuttgart-Nord, Germany, assignor to Firma Dr. - Ing. h.c.F. Porsche K.G., Stuttgart-Zuffenhausen, Germany

Filed July 8, 1970, Ser. No. 53,128

Claims priority, application Germany, July 9, 1969, P 19 34 681.7

Int. Cl. B60k *5/02*

U.S. Cl. 180—54 R **17 Claims**



Motor vehicle, especially passenger motor vehicle, having a multicylinder, in-line engine including a cooling plant arranged ahead or above the non-driven axle, and a change-speed gear interlocked with a differential gear including a clutch as well as the non-driven auxiliary devices such as a battery, fuel tank and spare wheel are arranged above or behind the driven axle. The flywheel and the auxiliary equipment which do not necessarily have to be driven in synchronism with the engine crankshaft are associated with the change-speed gear and drivingly connected with it or the flywheel, respectively.

3,710,885

VEHICLE ENGINE MOUNTING

Robley C. Brown, 333 Ervilla Street, Pomona, Calif.

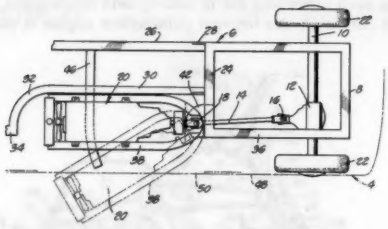
Filed Jan. 18, 1971, Ser. No. 107,106

Int. Cl. B60k *5/12*

U.S. Cl. 180—64 M **3 Claims**

An automotive vehicle including an engine having a drive connection to an axle, the drive connection being provided

with a universal joint adjacent the engine, the engine being mounted on the sub-frame having a pivotal connection with the main frame on a vertical axis coincident with the universal joint, the sub-frame and engine being swingable from a position generally aligned with the main chassis frame to a position outward therefrom and at an angle thereto to provide ready access to both sides of the engine for servicing without disconnecting the drive connection with the axle.



3,710,886

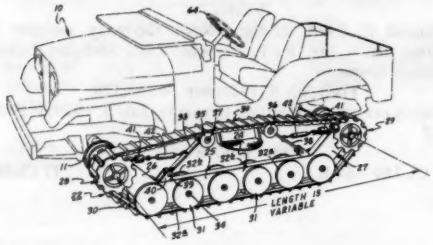
MECHANISM FOR CONVERTING WHEELED VEHICLE INTO TRACKED VEHICLE

Andrew F. Wagner, 288 Buchanan Field Road, Concord, Calif.

Filed June 12, 1969, Ser. No. 838,369

Int. Cl. B62d *55/08*

U.S. Cl. 180—9.2 R **7 Claims**



Mechanism for converting an automotive vehicle having tire-equipped wheels into a tracked vehicle. The conversion mechanism includes a pair of track assemblies respectively adapted to be connected along opposite sides of the vehicle to the front and rear brake drums thereat to replace the wheels of the vehicle with endless ground-traversing tracks. The mechanism further includes a steering system utilizing the brake apparatuses respectively associated with the brake drums and used in conjunction with the brake system of the vehicle to steer the same upon conversion thereof to a tracked vehicle.

3,710,887

AIR CUSHION VEHICLE WITH SUPPLEMENTAL SUPPORT WHEELS INCLUDING CENTRIFUGAL FAN MEANS

John Van Veldhuizen, 31601 S.W. 197th Avenue, Homestead, Fla.

Filed Aug. 7, 1970, Ser. No. 62,033

Int. Cl. B60v *1/04, 3/04*

U.S. Cl. 180—119 **6 Claims**

A vehicle body including opposite side and end peripheral skirt portions which project at least slightly downwardly below a central underportion of the body in order to define a downwardly opening central chamber. Longitudinally spaced portions of the side walls of the body include horizontal openings formed therethrough adjacent the lower extremities of the side walls and opening into longitudinal air plenums defined within the side walls. The plenums open downwardly and inwardly into the opposite sides of the central chamber and axial intake driven blower wheels are supported within the air plenums in registry with the inner ends of the horizontal openings and are operative to draw ambient air into the air plenum chambers from the exterior of the body through the horizontal openings for subsequent discharge downwardly and inwardly into the central chamber, whereby a vehicle supporting air cushion is formed in the central chamber. The blower wheels include peripheral load supporting tread portions and are vertically shiftable between upper and lower positions spaced above and lowered into rolling contact with a vehicle body supporting surface disposed beneath the vehicle body and along which the body is to be moved.

3,710,888

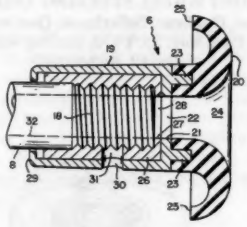
ROTATABLE EARTIP STETHOSCOPE

Edward Lynn Peart, Arden, Buncombe, N.C., assignor to Sybron Corporation, Rochester, N.Y.

Filed June 9, 1971, Ser. No. 151,470

Int. Cl. A61b *7/02*

U.S. Cl. 181—24 **6 Claims**



A stethoscope having eartips rotatably mounted on its sound tubes, permitting the tubes to move relative to the eartips without traumatizing the ear canals of the stethoscope user.

3,710,889

ATTENUATION OF NOISE FROM AIR OR GAS INTAKE DUCTS, MORE ESPECIALLY IN AIRCRAFT JET TURBINE ENGINES

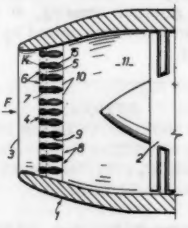
Jacques Edouard Lamy, Fontenay-aux-Roses, France, assignor to Societe Nationale D'Etude et De Construction De Moteurs D'Aviation, Paris, France

Filed April 20, 1970, Ser. No. 30,119

Claims priority, application France, April 23, 1969, 6912896

Int. Cl. F02k *11/00*

U.S. Cl. 181—33 HA **9 Claims**



A device for the attenuation of noise emanating from the intake duct of a machine fed with gaseous fluid, comprising a

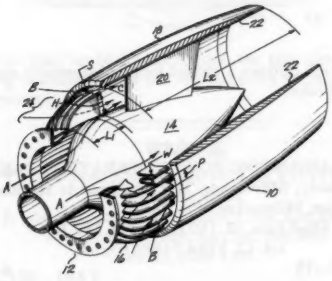
structure for location in the duct which is adapted to split the intake into a multiplicity of elementary flows and to subject each flow to a sonic-speed restriction, together with means for reconstituting the intake immediately downstream of said structure.

3,710,890

AIRCRAFT ENGINE NOISE SUPPRESSION

Harold C. True, Seattle, Wash., and Richard D. Fitzsimmons, Arlington, Va., assignors to The Boeing Company, Seattle, Wash.

Filed Sept. 27, 1971, Ser. No. 184,137
Int. Cl. B64d *33/06;* **F01n** *1/14*
U.S. Cl. 181—33 HC **15 Claims**



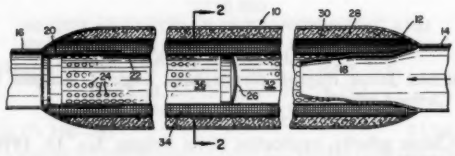
An exhaust nozzle noise suppression apparatus adapted for attachment to existing aircraft jet engines. The exhaust flow is directed by a centerbody plug into the inside of a series at least 20 corrugated lobes spaced around the existing exhaust passageway. An ejector shroud is closely spaced around the lobes to entrain large quantities of ambient air along the outside of the lobes by ejector action to increase the mass flow within the shroud while decreasing the velocity of the exhaust gases. The decreased velocity results in substantially attenuated jet noise levels. Total thrust output is maintained despite the decreased velocity because of the increased mass flow. Preferred embodiments utilize a centerbody valve means for either forcing all flow outwardly through the lobes for sound suppression or allowing flow through the center of the lobe array for cruise flight.

3,710,891

AUTOMOTIVE MUFFLER

Ray T. Flugger, P.O. Box 2098, Petaluma, Calif.

Continuation-in-part of Ser. No. 123,346, March 11, 1971, abandoned. This application Aug. 25, 1971, Ser. No. 174,829
Int. Cl. F01n *1/10*
U.S. Cl. 181—50 **18 Claims**



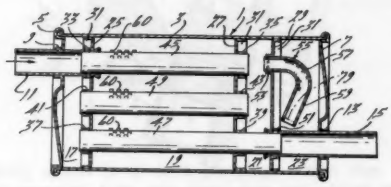
A muffler having a fluid inlet tube defining a Venturi throat and a perforate fluid outlet tube provided with an abutment at its inner end aligned with and spaced from the throat. In one form of the muffler, the inlet tube terminates at the throat and, in another form, the throat is connected by a perforate tube of relatively small diameter with said abutment. A sound absorber surrounds the inlet and outlet tubes.

3,710,892

TRANSVERSE TUNING TUBE

Franklin R. Hubbell, III, Brooklyn, Mich., assignor to Tenneco Inc., Racine, Wis.

Filed April 29, 1971, Ser. No. 138,714
Int. Cl. F01n *1/04, 1/08, 7/18*
U.S. Cl. 181—54 **4 Claims**



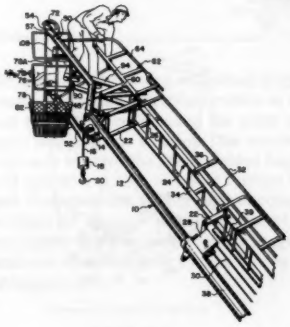
A tubular tuning tube element is attached to a transverse partition in a muffler and has a major portion of its length extending transversely of the length of the muffler inside of a tuning chamber.

3,710,893

PORTABLE EXTENDIBLE CRANE WITH WORK BASKET

Wilburn L. Hippach, San Gabriel, Calif., assignor to Bliss & Laughlin Industries, Incorporated, Oak Brook, Ill.

Continuation-in-part of Ser. No. 846,825, Aug. 1, 1969, Pat. No. 3,638,806. This application June 21, 1971, Ser. No. 154,975
Int. Cl. E06c *5/06, 7/16*
U.S. Cl. 182—2 **13 Claims**



A power extendible crane boom and ladder having a depending work basket pivoted to a yoke extension on the end of the boom and including adjustable bracing and safety ladder means between the crane and basket in all positions.

3,710,894

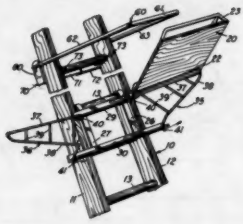
LADDER PLATFORM ATTACHMENT

Rawleigh D. O'Dell, Atlanta, Ga., assignor to Ulace J. O'Dell, Lewisburg, Ohio, a part interest

Filed March 10, 1971, Ser. No. 122,884
Int. Cl. E06c *7/16*
U.S. Cl. 182—106 **12 Claims**

A support means adapted to be attached to a ladder to provide a platform operable for supporting an operator or other desirable means while the ladder is in use and includes a frame attachment assembly which will permit the platform to be moved from an operable supporting position to a displaced nonsupporting position to allow ascending and descending movement relative thereto along the ladder. The frame assembly includes a pair of bracket supports members pivotally supported for movement from a laterally displaced nonsup-

porting position to a fore and aft operable supporting position with the platform supporting surface in contact with an upper edge of the support brackets. The frame assembly includes means for removably attaching the platform support means to the rungs of a ladder. A safety ring supporting means defining



a supporting area around the path of ascending and descending movement along the ladder is removably attached to the ladder in vertically spaced location relative to the platform support means to provide safety means for an operator standing on the platform support means.

3,710,895

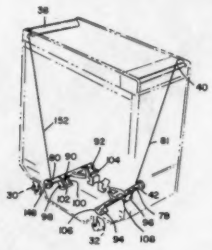
CART WITH BRAKE AND RETENTION SYSTEM

Stuart I. Freedman, Los Angeles, Calif., assignor to Walter-Kiddie & Company, Inc., Clifton, N.J.

Filed Sept. 18, 1970, Ser. No. 73,563

Int. Cl. B60t *1/14*

U.S. Cl. 188—5 **17 Claims**



A food serving cart with a combined brake and retention system where the brake system includes four brake arms which are normally in a restraining position until purposefully released and which cause a portion of the cart to be lifted if the cart should move undesirably, and where the retention system includes two pivotable abutment elements for engaging a projection attached to a base such as the floor of an aircraft interior. The brake and retention system is simply operated by pivoting a handle located about waist high to a first position to release the brake arms and to a second position to pivot the abutment elements to disengage the projection.

3,710,896

ANTI-RATTLE DEVICE FOR A DISC BRAKE

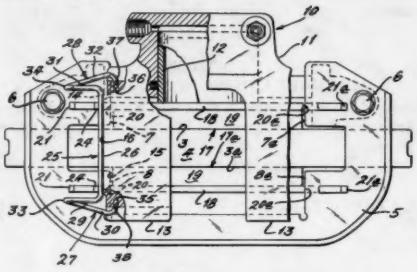
John A. Machek, Creve Coeur, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Nov. 9, 1970, Ser. No. 87,973

Int. Cl. F16d *55/224*

U.S. Cl. 188—73.5 **9 Claims**

An anti-rattle or biasing member is biased between the caliper and the inboard and outboard brake shoes of a caliper type disc brake respectively urging said caliper and brake shoes toward anti-rattling engagement with the brake support



member which defines a closed loop substantially about the disc of said brake.

3,710,897

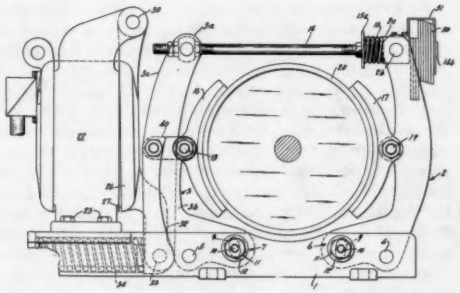
SELF-ADJUSTING POWER OPERATED BRAKE

John K. Moody, Milwaukee, Wis., assignor to Harnischfeger Corporation, Milwaukee, Wis.

Filed June 28, 1971, Ser. No. 157,184

Int. Cl. F16d *51/00, 65/38*

U.S. Cl. 188—75 **6 Claims**



A power operated brake of the type having self-adjusting brake shoes which are opened by power means and closed by spring means relative to the wheel being braked. The brake includes means for automatically adjusting the brake shoes to compensate for wear thereof. The self-adjusting means includes a series of shims which automatically move into slack take-up position when sufficient wear occurs in the shoe.

3,710,898

DRUM-TYPE BRAKE

Michael James Hughes, Birmingham, England, assignor to Girling Limited

Filed Jan. 7, 1971, Ser. No. 104,566

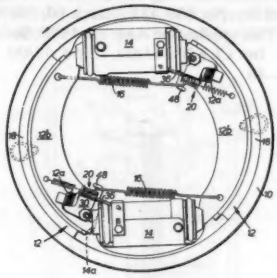
Claims priority, application Great Britain, Jan. 13, 1970, 1,665/70

Int. Cl. F16d *65/56, 51/52*

U.S. Cl. 188—79.5 GT **14 Claims**

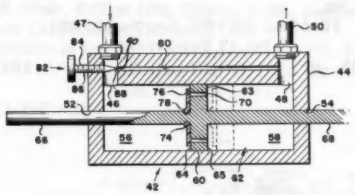
This invention is concerned with a drum-type brake comprising an actuator engaging one of a pair of brake shoes via an adjuster device of extensible overall length, the adjuster device including a pawl and ratchet mechanism having a pawl carrying lever pivotally mounted on the adjuster body, and a link connected to the lever and operable upon actuation of the

actuator to cause angular rotation of the lever which in turn causes the overall length of the adjuster device to increase



thereby to take up brake-shoe wear, the link consisting of or including resilient means to limit the force of the pawl acting on the ratchet.

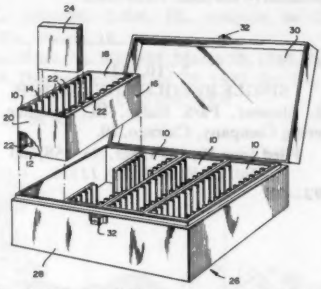
3,710,899
VALVE FOR ANTI-SKID BRAKE CONTROL MECHANISM
Harald J. Von Keszycki, 5220 Collier Place, Los Angeles, Calif.
Filed Aug. 8, 1969, Ser. No. 848,605
Int. Cl. B60t *8/00*
U.S. Cl. 188—181 T **7 Claims**



A valve for utilization in an automatic anti-skid brake control mechanism. The valve is activated by a change in the brake torque of a skidding vehicle wheel during the transition of the vehicle wheel from the rotating to the skidding condition. As the vehicle commences to skid, the valve causes the hydraulic pressure on the brake to be reduced, whereby the brake is automatically disengaged until the wheel again begins to rotate. Simultaneously, back pressure on the vehicle brake pedal is increased, temporarily forcing the pedal upward against the operator's foot, upon which occurrence braking pressure may then again be reapplied.

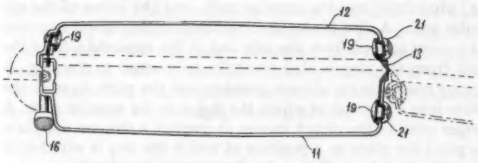
3,710,900
MODULAR SYSTEM FOR TRANSPORTING AND STORING TAPE CARTRIDGES AND CASSETTES
Arthur Alan Fink, 595 Mclean Avenue, Yonkers, N.Y.
Filed Sept. 30, 1970, Ser. No. 76,792
Int. Cl. A45c *13/00*
U.S. Cl. 190—51 **1 Claim**

A system for conveniently storing and transporting tape cartridges and cassettes comprising a plurality of compartmentalized modular trays interchangeably utilizable with an assortment of dissimilarly configured outer cases. Each modular tray includes spacer means defining compartments for individually holding the cartridges or cassettes. The trays are relatively sized so that a predetermined number thereof may be fitted into any one of a variety of outer cases either for storage or display purposes, or for transporting from one location to another. Due to the modular configuration of the compartmentalized trays, the tape cassettes or cartridges may be



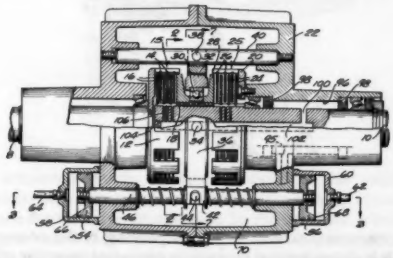
conveniently stored in distinct groupings which may be separately removed from one outer case and placed into another.

3,710,901
KNOCK DOWN LUGGAGE
Edward J. Guard, and Robert F. Oliver, both of Maitland, Fla., assignors to Go Luggage Corporation, Maitland, Fla.
Continuation-in-part of Ser. No. 669,459, Sept. 21, 1967, abandoned. This application May 1, 1970, Ser. No. 33,644
Int. Cl. A45c *5/10*
U.S. Cl. 190—41 R **17 Claims**



A luggage arrangement involving individual luggage units which can be easily assembled and disassembled at the will of the user without tools, thus minimizing the costs associated with manufacture, shipping and storage. This attribute makes it possible for the user to store the disassembled luggage units in a minimum of space, and able to easily replace broken or lost parts himself. Our invention furthermore encompasses the use of various types of luggage units, and novel, two-part locking fasteners usable in the assembly of our luggage, which can be separated and removed only by one having access to the interior of a luggage unit.

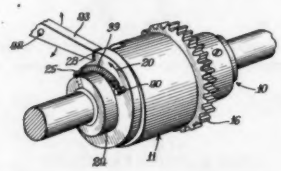
3,710,902
SELF-COOLING CLUTCH AND BRAKE
Quinten A. Hansen, 4338 Hy 38, Franksville, Wis.
Division of Ser. No. 56,905, July 21, 1970, Pat. No. 3,653,477. This application Nov. 26, 1971, Ser. No. 202,264
Int. Cl. F16d *67/02*
U.S. Cl. 192—18 A **4 Claims**



A rod which operates the disks of a clutch or brake is provided at its ends with pistons which, in each operation, pump

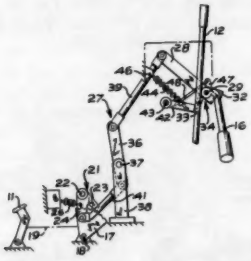
coolant from a sump and eject it onto the disks for the cooling thereof. The same pistons may constitute fluid pressure means for the operation of the rod.

3,710,903
SINGLE REVOLUTION CLUTCH
Robert B. Shearer, Park Ridge, Ill., assignor to Persson Engineering Company, Chicago, Ill.
Filed June 30, 1971, Ser. No. 158,400
Int. Cl. F16d *71/00, 11/06*
U.S. Cl. 192—28 **2 Claims**



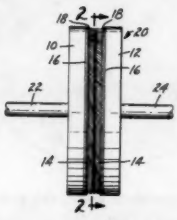
A driving member has an abutment which rotates in an annular path about an axis. Within that annular path is a driven member. A dog is slideably mounted on the driven member to move along a way which is substantially normal to a radius about the axis. The dog moves between positions at which it is (a) projecting into the annular path, and (b) is out of the annular path. A disc pivotally connected to the driven member at a point spaced from the axis and at the opposite side of the axis from the dog is also pivotally connected to the dog. A spring connects the driven member and the plate to urge the plate into a position at which the dog is in the annular path. A finger outside the clutch moves to contact a stop on the plate to pivot the plate to a position at which the dog is withdrawn from the annular path thereby disengaging the clutch.

3,710,904
BRAKE AND TRANSMISSION SHIFT LOCKS WITH SINGLE CONTROL LEVER
Ronald G. Boyer, Peoria, and Drexel R. Fouts, Bellevue, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Dec. 16, 1971, Ser. No. 208,751
Int. Cl. B60k *29/02*
U.S. Cl. 192—4 A **6 Claims**



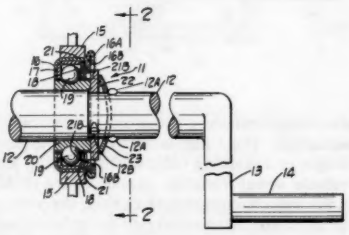
A transmission shift lock and parking brake arrangement which is characterized by a single operating lever for effecting locking of the transmission shift lever in neutral position as well as locking of the brakes in engaged position.

3,710,905
TORQUE TRANSMITTING DEVICE
Roger V. Grundman, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 805,422, March 10, 1969, Pat. No. 3,617,426. This application Aug. 13, 1970, Ser. No. 63,629
Int. Cl. F16d *41/00, 13/64, 63/00*
U.S. Cl. 192—46 **7 Claims**



A torque transmitting device in which short stiff normally straight fibers extend from facing planar surfaces of a pair of supported members in a circular pattern around a common axis and intermesh to permit torque transmission from one member to the other.

3,710,906
RATCHET DRIVE MECHANISM
William O. Setele, Independence, Ohio, assignor to Kendale Industries, Inc.
Filed Sept. 30, 1971, Ser. No. 185,081
Int. Cl. F16d *41/00*
U.S. Cl. 192—46 **10 Claims**

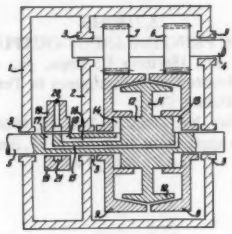


A ratchet drive mechanism for obtaining a positive drive of a driven member in one rotative direction of the driving member and an idle or free-wheeling condition of the driven member in an opposite rotative direction of the driving member. The mechanism including a ball bearing is self-contained to be mounted as a unit in the hub of a driven member such as a wheel and upon a driving member such as a shaft. It is particularly adapted for use in such driven apparatus as in the front wheel of a child's tricycle. This is an abstract only of the specific illustration of the invention given by way of example, and is not to be used in the interpretation of the claims nor as a limitation on the scope of the invention.

3,710,907
REVERSING CLUTCHES WITH FOLLOW-UP VALVE
Eilif Andersen, Jyderup, Denmark, assignor to Motorfabriken Bukh A/G, Kalundborg, Denmark
Filed Dec. 30, 1971, Ser. No. 214,045
Claims priority, application Denmark, Jan. 6, 1971, 41/71
Int. Cl. F16d *25/10*
U.S. Cl. 192—87.17 **1 Claim**

A reversing gear, primarily for boat engines, comprising a pair of coaxial, counter-rotating drive elements, and a driven

element accommodated in the space between said drive elements and mounted for axial displacement so as to be engaged with either of, and disengaged from, said drive elements. The driven element is carried by a plunger the end portions of which are received in cylinder chambers provided in said drive elements and communicating, via ducts in the drive shaft, with



pressure fluid supply and drainage ports controlled by an axially displaceable slide valve so that a servo effect is obtained when the slide valve is displaced relative to the shaft which is thereby itself caused to move axially, together with the driven element, relative to the slide valve and the drive elements, respectively.

3,710,908

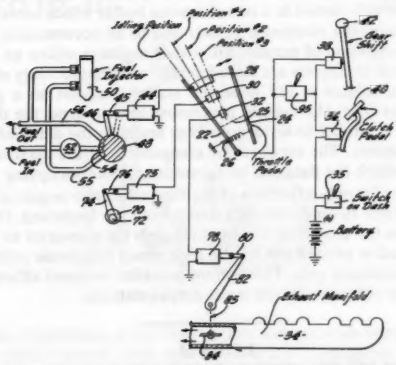
VEHICLE ENGINE BRAKING SYSTEM

Earl B. Muir, Rolling Hills Estates, Calif., assignor to White Motor Corporation, Cleveland, Ohio

Division of Ser. No. 711,333, March 7, 1968, Pat. No. 3,525,317. This application Feb. 19, 1970, Ser. No. 56,993

Int. Cl. B60k *21/00*

U.S. Cl. 192—.084 **2 Claims**



A multiple-position switch is actuated by a throttle pedal that is spring-loaded for retraction from an engine idling position through a series of three successive retracted positions. At the first of the three retracted positions the multiple-position switch terminates combustion in the engine to create a light braking effect which is primarily the result of friction losses in the various moving parts of the engine and vehicle. At the second retracted position of the throttle the switch is effective to create engine braking action by holding the exhaust valves of the engine continuously in slightly open position. At the third retracted position of the throttle pedal the switch operates a butterfly valve in the exhaust manifold of the engine to provide back pressure in the manifold, the additional braking effect by the back pressure unexpectedly increasing the effectiveness of the braking effort by the partially open exhaust valves.

3,710,909

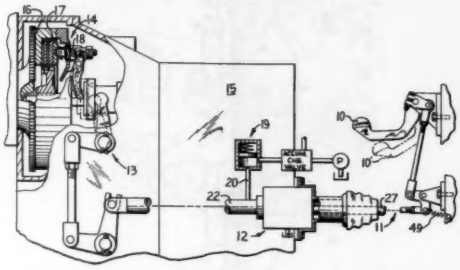
HYDRAULIC CLUTCH BOOSTER WITH SUPPLY AND EXHAUST VALVE

Howard L. Johnson, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 808,903, March 20, 1969, Pat. No. 3,596,564. This application Dec. 28, 1971, Ser. No. 102,219

Int. Cl. F16d *25/08*

U.S. Cl. 192—91 R **7 Claims**



A clutch booster means is operatively connected between a clutch pedal and a clutch actuating linkage to provide a hydraulic boosting force for aiding the operator in effecting clutch disengagement. The booster means comprises a piston attached to the clutch actuating linkage and means for communicating a pressurized fluid behind the piston when the pedal is depressed for clutch disengagement purposes. Upon pedal release, such means automatically functions to exhaust such pressurized fluid to permit the piston and clutch to return to their normal, clutch engagement positions.

3,710,910

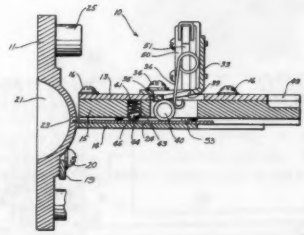
TOKEN CONTROLLED CIRCUIT FOR MACHINE ACTUATION SYSTEM

Thomas R. Smith, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Continuation of Ser. No. 801,325,, Feb. 24, 1969, abandoned. This application Aug. 9, 1971, Ser. No. 170,262

Int. Cl. G07f *1/06*

U.S. Cl. 194—4 R **8 Claims**

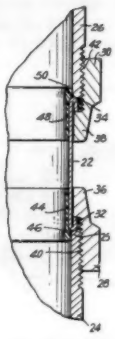


The actuation system disclosed is operable for verifying authenticity of a token and conditioning the control circuit of a machine for selective energization by the operator. Verification of the token includes checking of the size, conductivity, and heat deformability characteristics of the token. Actual energization of the machine is effected by an operator-actuated switch.

3,710,911
LIQUID-TIGHT SWIVEL COUPLER FOR ELECTRICAL CONDUIT

Jonah Eidelberg, Huntington Station; Thomas Mooney, Mt. Sinai, and John J. Brett, Syosset, all of N.Y., assignors to Electrical Fittings Corporation, East Farmingdale, N.Y.

Filed Nov. 18, 1970, Ser. No. 90,496
Int. Cl. H02g *3/06*; **F16l** *19/00*
U.S. Cl. 174—84 S **10 Claims**

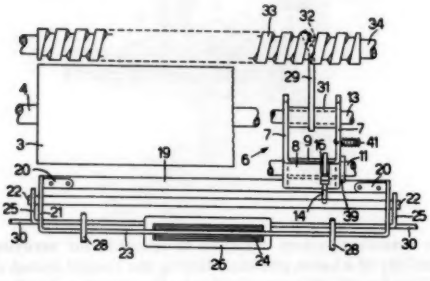


A swivel coupler for connecting a pair of rigid electrical conduits especially in a confined space, includes a tubular body member with an inner sleeve of rigid plastic material, which protrudes slightly beyond the ends of the body. A pair of nuts are slidably mounted on the outer peripheral surface of the tubular body between outwardly directed radial flanges adjacent opposite ends of the body and which thread a corresponding conduit. A method of fabricating the coupling is to reverse opposite body ends 180° to abut the outer peripheral surface of the body, have one end with an outside diameter smaller than the inside diameter of the nuts, position the nuts back to back on the body, and then enlarge the reduced end of the body to its normal diameter.

3,710,912
HIGH SPEED SERIAL PRINTING DEVICE FOR TYPEWRITERS, TELEPRINTERS, CALCULATING MACHINES, ACCOUNTING MACHINES AND THE LIKE

Franco Bretti, Are di Caluso, and Giuseppe Nuccio, Candia Canavese, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Turin, Italy

Filed April 3, 1970, Ser. No. 25,312
Claims priority, application Italy, April 16, 1969, 51439 A/69
Int. Cl. B41j *1/32*
U.S. Cl. 197—49 **1 Claim**

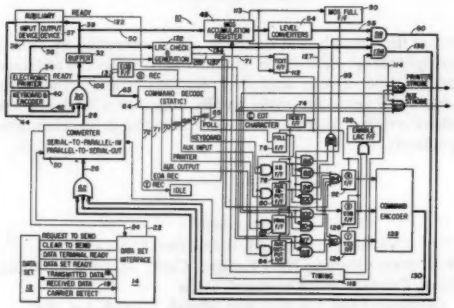


A high speed serial printing device comprising a drum rotatable on a horizontal shaft and carrying circumferentially a plurality of rows of types which are striken by a hammer mounted on a carriage movable in parallel to said shaft. The hammer is operated by an electromagnetically controlled universal bar, which is mounted on the frame of the device and is extended parallel to said shaft through the entire length of the drum, as to engage said hammer in every transverse position through which said carriage moves.

3,710,913
ELECTRONIC PRINTING INPUT-OUTPUT STATION

James Brennan, Jr.; Hermon L. Pope, Jr., and Donald F. Boren, all of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 788,226, Dec. 31, 1968, Pat. No. 3,638,197. This application June 24, 1971, Ser. No. 156,514
Int. Cl. B41j *19/00*
U.S. Cl. 197—82 **6 Claims**



An input-output station for a remote time shared computer is described which has a high speed electronic printer output and a keyboard encoder input. The output from the keyboard is temporarily stored in a one character buffer which serves as the input to the electronic printer and to an accumulator register comprised of parallel MOS shift registers where an entire line of characters are stored as they are printed. Only after the accumulator is full does the station respond to a poll character from the central processing unit to send the data through a parallel-to-serial converter and over the data link to the computer. The input to the computer is at the maximum rate at which the data can be transmitted, thus occupying the computer for only a fraction of the time otherwise required for the operator to enter the data direct from the keyboard. Data sent from the computer is routed through the converter to the buffer and is printed out by the high speed electronic printer at the maximum rate. This system provides for most efficient use of the computer by the input-output stations.

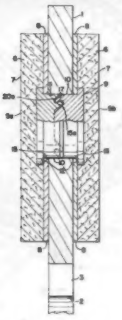
3,710,914
RIVETLESS FRICTION PAD FOR AIRCRAFT BRAKES

Francis J. Lowey, and John E. Gerding, both of Medina, Ohio, assignors to Friction Products, Co., Medina, Ohio

Filed Dec. 18, 1971, Ser. No. 176,420
Int. Cl. F16d *13/68*
U.S. Cl. 192—107 R **9 Claims**

Rivetless friction components for brakes, clutches, etc., comprising a plurality of replaceable friction pads assembled rigidly on a disc-like support by fastening means comprising a pair of cooperating elements each having an annular body portion with a radially extending enlargement or flange at one end, an axially extending annular deformable lip at the other end, and a groove adjacent said lip, the said groove in one element being disposed radially inward of said lip and that of the other element being radially outward, one wall of each groove being an axially extending wall of said lip and the other wall being inclined with respect to both the axis and radii of said body portion, lips and said grooves in each element being posi-

tioned so that the diameter of the lip in each element corresponds to that of a region of the inclined wall near the free edge thereof, of the other element whereby said lips are deformed into interlocking relationship when said elements are forced axially together. The transverse cross-sectional size and shape of said body portion corresponds to mounting



openings formed in said support and in a metal backing of said pads. The said flange overlies an edge of openings in said backing and the flanged end may be covered by and bonded to a continuous layer of friction material bonded to said backing of the pads. The increased area and more uniform-frictional heating extends the life of the frictional component.

3,710,915

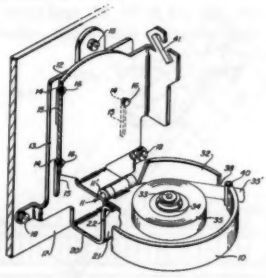
RIBBON SUPPLY SUPPORTING STRUCTURE IN TYPEWRITERS AND SIMILAR MACHINES

Friedrich Teichmann, Feucht, and Hans-George Hengelhaupt, Nuernberg, both of Germany, assignors to Triumph Werke Nuernberg A.G., Nuernberg, Germany

Filed July 13, 1970, Ser. No. 54,457

Int. Cl. B41J *33/14, 35/00*

U.S. Cl. 197—151 **10 Claims**



In a typewriter, a member carries and conceals normally an ink ribbon supply, such as a roll, in a flatly contiguous relation to one side of the machine, and is supported on a structure so that it can be elevated and then swung outwardly from the machine for facilitating replacement of the ribbon supply in a horizontally flat and elevated posture thereupon. Said member carries the supply roll by an arbor which has a device associated with it which as the ribbon is drawn off the supply roll, energizes a spring in order to oppose or cancel out resiliently excessive pay-off of ribbon from the supply roll.

3,710,916

END OF PAGE SIGNALLING DEVICE

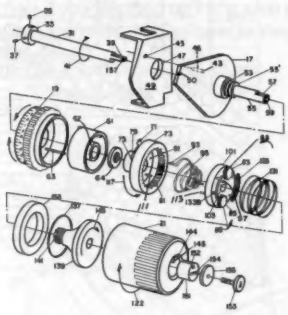
Carl D. Russell, 1502 South Boulder, Apt. 22-G, Tulsa, Okla.

Filed Jan. 12, 1970, Ser. No. 2,172

Int. Cl. B41J *29/44*

U.S. Cl. 197—189 **5 Claims**

The invention relates to apparatus for incorporation in new typewriters or for attachment to existing typewriters for signalling a preset line, paragraph, or page length. The device attaches to the platen and platen support frame and permits the operator to index, from a starting or home position, the number of lines or amount of platen rotation desired. As typing proceeds and the platen rotates, relative motion is established between a bell ringer structure and a bell so that



upon reaching the indexed position, the signal is sounded. Typing may be continued without damaging the device through the provision of a clutch or slipping mechanism. The device can be easily reset through the provision of an operator knob for disengaging the drive from the platen to permit a return spring, which has been tensioned by platen movement, to return the mechanism to home position.

3,710,917

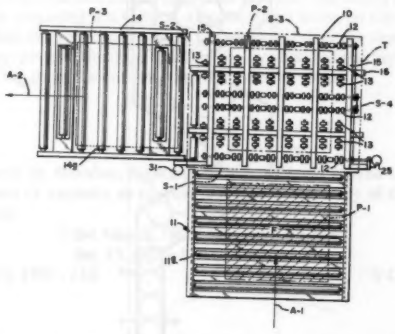
CONVEYING APPARATUS

Howard Black, Briarcliff Manor, N.Y., and Morton A. Breier, Greenwich, Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Jan. 29, 1971, Ser. No. 110,842

Int. Cl. B65g *47/00;* **B05g** *15/00*

U.S. Cl. 198—20 R **9 Claims**



Conveying apparatus comprising a right-angle transfer station whereby the movement of a container or the like is diverted automatically or semi-automatically from one horizontal direction into another horizontal direction perpendicular thereto.

3,710,918

CONTAINER FEEDING APPARATUS FOR WASHERS

Momir Babunovic, Des Peres, Mo., assignor to Barry-Wehmiller Company, St. Louis, Mo.

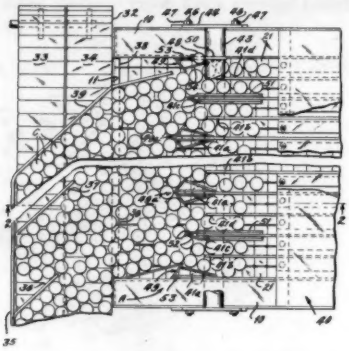
Filed Jan. 28, 1971, Ser. No. 110,386

Int. Cl. B65g *47/22*

U.S. Cl. 198—30 **5 Claims**

Container washer feed mechanism to prevent uneven and faulty feed of containers to the washer. The mechanism in-

cludes feed conveyors periodically reversible to reduce feed pressure at the washer loader and utilize back pressure to aid in obtaining uniform flow of containers. It includes also guide means to establish lanes for the containers and adjustable



means on the lane guides to control the size and flow direction of the entrances to the lanes so that container bridging and jamming at the lane entrances is prevented, and the lane entrances are capable of being sized to suit the containers.

3,710,919

SELF-ARRANGING CONVEYOR

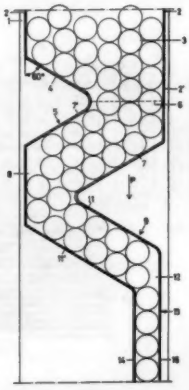
Jan Maters, Nieuwkoop, Netherlands, assignor to Blom & Maters Machinefabriek N.V., Aarlanderveen, Netherlands

Filed April 20, 1971, Ser. No. 135,549

Claims priority, application Netherlands, April 21, 1970, 7005742

Int. Cl. B65g 47/26

U.S. Cl. 198—30 **2 Claims**



Containers supplied in a random fashion are arranged in single file by being caused to follow a zig-zag path on a conveyor.

3,710,920

CLOSURE HANDLING APPARATUS

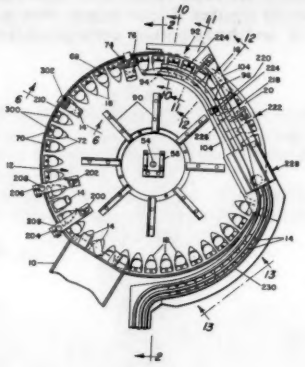
Walter S. Sterling, Quincy, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.

Filed March 16, 1970, Ser. No. 19,741

Int. Cl. B65g 47/24

U.S. Cl. 198—33 AA **6 Claims**

Closure handling apparatus arranged to effect orientation of elongated cylindrical closures which are greater in length than in diameter and in which the weight is substantially uniformly distributed throughout the length thereof. Closures are



received in radially arranged pockets in either an oriented or non-oriented position, provision being made for rejecting from their pockets the non-oriented closures.

3,710,921

SELECTION APPARATUS

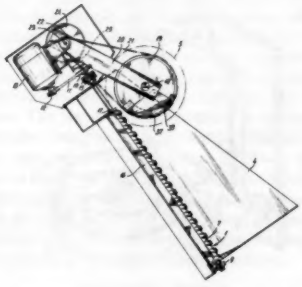
Jakobus Petiet, Leiden, Netherlands, assignor to N.V. Leidsche Apparatenfabriek, Leiden, Netherlands

Filed March 16, 1971, Ser. No. 124,995

Claims priority, application Netherlands, June 10, 1970, 7008445

Int. Cl. B65g 47/24

U.S. Cl. 198—33 AA **8 Claims**



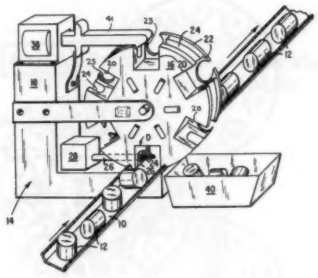
An apparatus for transmitting subjects closed at one end, such as bottle caps, from a supply container containing the subjects in random orientations, to a device for further use of the subject. A transport device transports the subjects one by one in a continuous row from a supply container along a finite transport track, and a device removes the subjects from the end of the transport track in predetermined orientations. Improperly oriented subjects are rejected and returned to the supply container. The removal device comprises a plurality of uniformly distributed removers connected to a common endless carrier and protruding from such carrier. The removers are moved continuously by the carrier with a velocity equal to the transport velocity of the subjects and are located over and adjacent to the last subject at the end of said transport track. Means are provided for thrusting the removers perpendicularly to the transport direction of the subjects when such removers are adjacent the last subject on the track.

3,710,922

APPARATUS FOR DETECTING AND REJECTING IMPROPERLY ORIENTED OBJECTS

Gerald B. Lanphere, Central Square; Seymour H. Bart, Liverpool, and Jack W. Armstrong, Baldwinsville, all of N.Y., assignors to Lipe-Rollway Corporation, Syracuse, N.Y.

Filed July 6, 1971, Ser. No. 159,757
Int. Cl. B65g 47/24
U.S. Cl. 198—33 R 7 Claims



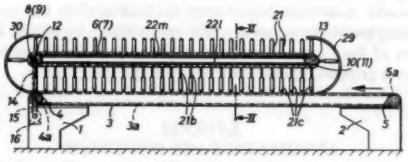
Apparatus utilizing a fiber optic system for detecting misorientation of an object passing on a conveyor. By means of the system light is projected onto the object and, if the latter is not properly oriented, the light is reflected back through the system and actuates a sensor. Upon actuation of the sensor, the apparatus operates through electromechanical means to remove the object from the conveyor.

3,710,923

ARTICLE SORTING INSTALLATION WITH AN ENDLESS CONVEYOR DISCHARGE MECHANISM

Hans-Georg Fromme, Wetzlar; Franz Nadler, Burgsolms; Siegfried Zimmer, Hermannstein, and Kurt Weller, Dutenhofen, all of Germany, assignors to Fromme Forderanlagen GmbH, Wetzlar, Germany

Filed Sept. 25, 1970, Ser. No. 75,611
Claims priority, application Germany, Oct. 18, 1969, P 19 52 643.3
Int. Cl. B65g 37/00
U.S. Cl. 198—81 4 Claims



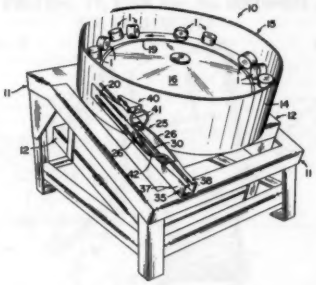
An article sorting installation arranged above a main conveyor belt and being adapted to move the transported articles sideways off said conveyor belt onto one of a plurality of smaller delivery belts which transport the articles to their places of final destination. The installation includes two endless chains arranged in parallel above the main conveyor belt and rotating vertically with a velocity equal to that of the main conveyor belt. The chains are linked by bars with one stripper being arranged slideably on each bar. Guide rails are provided above and along the two sides of the main belt for guiding the strippers in lateral direction. Junction rails interconnect the guide rails, and switches are arranged at each intersection for guiding the strippers from the guide rails into the junction rails. The switches are controlled electromagnetically and are operated according to a predetermined program for guiding simultaneously a plurality of strippers transversely across the conveyor belt, each stripper moving in a separate junction rail and all strippers being aligned in the direction of the belt travel. In the place of separate strippers at least two strippers may be connected to form a unit which is directed by only one switch to move in only one junction rail transversely across the main conveyor belt, thereby pushing an article off the main conveyor belt onto one of the delivery belts.

3,710,924

CUP ORIENTING AND FEEDING DEVICE AND METHOD

George E. Schultz, Clearwater, Fla., assignor to Tangen Drives Inc., Clearwater, Fla.

Filed Nov. 9, 1970, Ser. No. 87,906
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AA 11 Claims



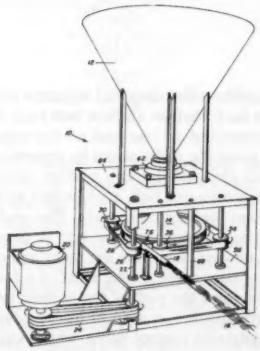
A cup orienting and feeding device is disclosed which employs a rotary conical feeder having a circular sidewall. The cups are engaged by a plow adjacent the periphery of the rotary feeder and delivered to a delivery chute and thereafter, in linear alignment with the delivery chute, is a tilting area in which the sidewalls flange outwardly and a ridge is provided in the base to tilt the cups in one direction or the other depending upon the orientation of the cup so that the open end is up. Thereafter the cups continue into a discharge chute which has an overlapping trap flange thus oriented in the open end up condition for delivery to automatic assembly equipment. The method recognizes that the center of gravity of a cup is closer to the top than it is to the open end and thus the tilting of the cup by engaging the skirt at a point closer between the open end than the top, but closer to the open end than the center of gravity, permits the cups to fall in the direction of the tops thus orienting them for delivery into the delivery chute.

3,710,925

CENTRIFUGAL STOWER

Knownly R. Dorman, Spokane, Wash., assignor to The United States of America as represented by the Secretary of the Interior

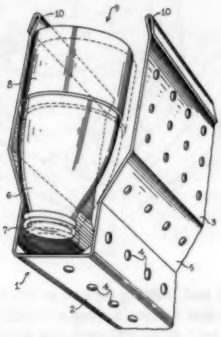
Filed May 6, 1971, Ser. No. 140,904
Int. Cl. B65g 31/00; G01f 11/20
U.S. Cl. 198—128 9 Claims



A centrifugal stower for propelling fluent solids or slurrys in a continuous stream. In the stower a continuous belt drives a

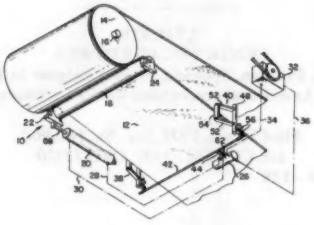
centrifugal accelerator while simultaneously acting as an outer wall of a centrifugal chamber and as a discharge belt. Because the fluent material always travels at approximately the same radial velocity as the adjacent portion of the accelerator, friction and wear are minimal. Through optimized design of the accelerator the need for accelerating vanes is eliminated.

3,710,926
GUTTER-SHAPED CARRYING TROUGH
Salomon Santen, Amsterdam, Netherlands, assignor to Stork Amsterdam N.V., Sportlaan, Amstelveen, Netherlands
Filed Feb. 23, 1971, Ser. No. 118,114
Int. Cl. B65g *15/00*
U.S. Cl. 198—131 **1 Claim**



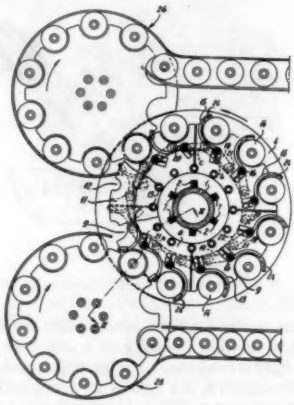
A light-weight gutter-shaped carrier for bottles to be conveyed through a sterilizer.

3,710,927
BELT ALIGNING APPARATUS
David A. Alsted, Star Route, P.O. Box 446, Moses Lake, Wash.
Filed Dec. 15, 1970, Ser. No. 98,317
Int. Cl. B65g *15/62*; **B65h** *25/26*
U.S. Cl. 198—202 **8 Claims**



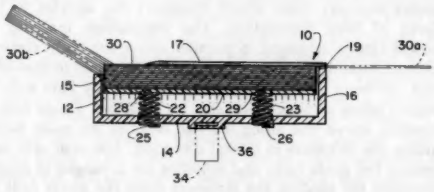
An adjustable roller disposed adjacent the drive roller of a belt system such that an endless belt runs thereover. A fluid actuator connected to one end of the adjustable roller and adapted to pivot the roller about its opposite end. Sensor arms including an elongate sensing portion mounted on opposed sides of the continuous belt, each sensor arm adapted to pivot about a point between its ends. The end of the elongate sensing portion of each sensor arm is disposed adjacent an edge of the endless belt while the other end of each sensor arm is adjustably connected to the ends of a longitudinal rod extending transverse the path of the endless belt. The transverse rod is interconnected at a point intermediate its longitudinal ends to a hydraulic control valve, which valve is, in turn, connected by conventional means to the fluid actuator.

3,710,928
GRIPPING DEVICE FOR BOTTLES
Tonny van Zijp, Leiden, Netherlands, assignor to N.V. Leidsche Apparatenfabriek, Leiden, Netherlands
Filed Oct. 29, 1970, Ser. No. 85,177
Claims priority, application Netherlands, Oct. 30, 1969, 6916365
Int. Cl. B65g *29/00*
U.S. Cl. 198—210 **8 Claims**



A device for gripping bottles in recesses defined by the circumference of a bottle dial plate of a bottle closing or opening machine comprising a plurality of arcuated gripping means with each of the arcuated gripping means being mounted near a recess in such a way that the gripping means extends around the recess from a place at some distance beyond the circumference of the recess at the inner edge of the dial plate to a place beyond the dial plate. The inner end of each gripping means is mounted in a manner preventing rotation but is releasably mounted to a vertical shaft rotatably supported in the dial plate. The lower end of the shaft is provided with a swing lever mounted thereto in a manner preventing rotation and the lever extends towards the inner side of the dial plate. A vertical shaft is secured to the end of the lever extending to the inner side of the dial plate and a cam roller is rotatably mounted to the vertical shaft. The cam roller follows a fixed cam disc mounted coaxially to a central shaft so that the arcuated gripping means are guided in such a manner that an arriving bottle may pass freely into the recess with the arcuate gripping means being swung into the position by means of the action of the cam and cam follower so that the bottle in the recess is gripped by the free end of the gripping means.

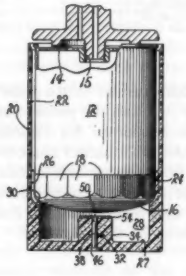
3,710,929
AUTOMATIC CARD DISPENSER
Manuel F. Morales, 19743 Welby Way, Canoga Park, Calif.
Filed June 14, 1971, Ser. No. 152,504
Int. Cl. A45c *11/18*
U.S. Cl. 206—39 **4 Claims**



Herein described is a cardholder for holding a plurality of business cards or the like and including a substantially rectan-

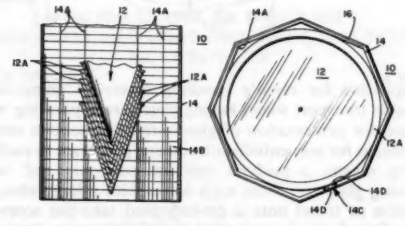
gular housing having an open top portion. A pair of retaining lips are disposed over the open portion and overlap a portion thereof. A support plate is disposed in the housing and urged from the bottom by a pair of springs, whereby a suitable stack of business cards can be positioned between the support plate and the retaining lip. An opening is left on one end so that a single card can be passed therethrough, while a larger opening is left on the other end so a plurality of cards may be placed into or taken from the holder.

3,710,930
FILTER PACKAGE
Maurice R. Owdom, 2201 South Pinkham Road, Visalia, Calif.
Filed Dec. 21, 1970, Ser. No. 100,066
Int. Cl. B01d *27/08*
U.S. Cl. 206—46 FC **1 Claim**



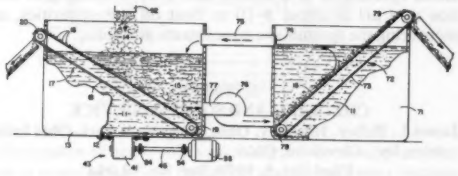
An improved package for use in packaging a filter can of a type normally employed in filtering oil circulating through the pressurized system of an automotive engine. The invention is characterized by an elongated support shell including within one end thereof an annular receiver for receiving and supporting an end of a filter can, and a cover shell telescopingly receiving therewithin the support shell and filter can, whereby the filter can is encapsulated in a substantially sealed package. The support shell is configured to include therewithin an oil retention cup circumscribing a piercing unit so that the support shell can be employed as a hand-tool in removing a spent filter can from a heated engine.

3,710,931
PACKAGE FOR FRAGILE NESTED ARTICLES AND METHOD FOR MAKING SAME
Paul Hollinger, Baltimore, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.
Filed July 7, 1971, Ser. No. 160,446
Int. Cl. B65b *53/02*; **B65d** *71/00*; **B65b** *53/02*; **B65d** *71/00*
U.S. Cl. 206—65 K **12 Claims**



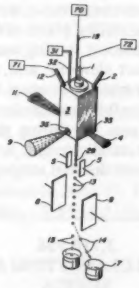
A package for and method of packaging individual stacks of nested fragile articles such as ice cream cones is provided in which a split sleeve of resilient compressible material is uniformly constrained into engagement with the stack of articles by an outer envelope of heat shrink material. In a preferred embodiment the sleeve is comprised of internally fluted or corrugated material having the flutes disposed orthogonally of the axis of the stack to engage the annular rims of the nested articles and preclude relative movement therebetween. The sleeve is longer than the stack, extends beyond both ends thereof and the heat shrink envelope is sealed about the package to maintain sanitation and protect the contents from moisture and oxidation.

3,710,932
SONIC DE-LINTING OF SEEDS OR THE LIKE FROM FIBROUS HOST MATERIAL
Albert G. Bodine, 7877 Woodley Avenue, Van Nuys, Calif.
Filed Dec. 17, 1969, Ser. No. 885,890
Int. Cl. B10j *1/12*
U.S. Cl. 209—1 **12 Claims**



High level sonic energy is applied to a contained liquid by means of an orbiting mass oscillator and resonant coupling. Fibrous material having seeds or the like embedded therein, such as cotton, is introduced into the liquid and subjected to vigorous mechanical vibration, which, because of the different acoustic properties of the fibers and seeds, causes the fibers to detach and separate from the seeds at their point of attachment.

3,710,933
MULTISENSOR PARTICLE SORTER
Mack J. Fulwyler; John A. Steinkamp, and James R. Coulter, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Dec. 23, 1971, Ser. No. 211,473
Int. Cl. B03b *1/00*
U.S. Cl. 209—3 **17 Claims**



An apparatus for rapidly and automatically analyzing and sorting minute particles on the basis of certain preselected characteristics. Particles flow in suspension through a flow chamber having multiple sensing means to detect preselected physical or chemical characteristics of each particle and then are jetted between charging electrodes and deflection plates. Signals from the sensors for each particle are compared with preset standards, and those droplets containing particles having characteristics not meeting those standards are automatically charged by the charging electrodes. The deflection plates provide a constant electric field which deflects charged

droplets away from uncharged droplets, thus sorting particles on the basis of their conformance or nonconformance to standards set for the preselected characteristics. This apparatus is particularly applicable to the rapid and automatic sorting of biological cells.

3,710,934
CONCENTRATION OF SPODUMENE USING FLOTATION

Russell A. Wyman, Ottawa 8, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

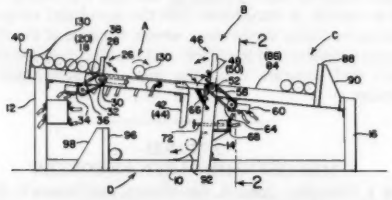
Filed June 29, 1970, Ser. No. 50,936
Int. Cl. B03b *1/04*; B03d *1/02*
U.S. Cl. 209—5 **9 Claims**

A method of concentrating and recovering spodumene from an aqueous pulp or slurry by conditioning the pulp with an aliphatic primary beta-amine having from seven to 15 carbon atoms (preferably as a soluble acid salt), subjecting to flotation at a pH of about 8–10 to float off the impurities, and recovering the spodumene concentrate as residue.

3,710,935
CHECKING AND SORTING DEVICE

James L. Heiser, Hinckley, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Oct. 5, 1970, Ser. No. 78,054
Int. Cl. B07c *5/08*
U.S. Cl. 209—73 **7 Claims**



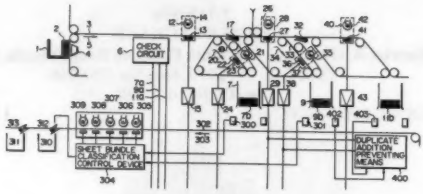
A device for checking run-out in elongated generally cylindrical shaft elements and for sorting those shafts which have more than a predetermined acceptable amount of run-out from the others as they are individually checked. The device comprises shaft support members which establish a rolling plane; contact elements coextensive with the support members, spaced below the rolling plane a distance equal to the amount of allowable run-out; sensing means for sensing shaft contact with the contact element; and, separator means for separating those shafts making contact from those which do not. In operation, a shaft is rolled down the rolling plane toward a first staging area. If, during this rolling travel, the shaft contacts the contact element, it is diverted to a second staging area, remote from the first staging area, for salvage or scrap processing.

3,710,936
APPARATUS FOR CLASSIFYING AND COUNTING SHEETS

Yoshiyuki Mizunuma, Kanagawa, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Nov. 9, 1971, Ser. No. 196,895
Claims priority, application Japan, Nov. 11, 1970, 45/98676
Int. Cl. B07b *13/04*
U.S. Cl. 209—82 **24 Claims**

Apparatus for classifying and counting sheets, post cards for examples, comprises a conveyor for conveying the sheets; a gate associated with the conveyor for deflecting the sheets away from the conveyor; sheet detecting means associated with the conveyor for generating a signal when it detects the sheet; a plurality of receivers for receiving sheets of different classes; check means for determining the classes of the sheets and for generating classification signals; gate driving means responsive to the classification signals and to the signal generated by the sheet detecting means; a first counter associated with the receivers for counting the number of sheets collected in respective receivers; a second counter which adds the number of sheets collected in respective receivers; a comparator for comparing the sum of the numbers of the sheets

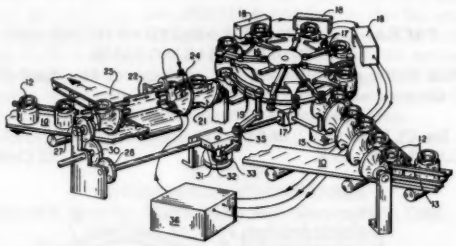


counted by the second counter with a preset number for determining whether the sum and the preset number coincide with other or not; a third counter for counting the number of wheets counted by the first counter and collected in respective receivers when the comparator determines that the sum coincides with the preset number; counting control means for controlling the second and third counters; and timing means for timing the operation of the third counter.

3,710,937
METHOD AND APPARATUS FOR TRANSPORTING GLASSWARE

Charles W. Cook, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Filed Dec. 18, 1970, Ser. No. 99,436
Int. Cl. B07c *3/02*
U.S. Cl. 209—74 R **9 Claims**

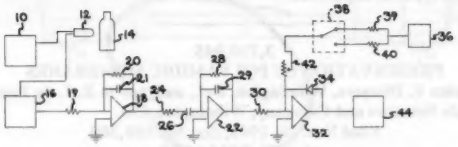


Apparatus for rapidly handling glassware comprising a rotatable transport wheel having glassware supporting means thereon for presentation of glassware to inspection stations, feed means for sequentially introducing glassware to such supporting means, a pushout arm for positively and rapidly removing glassware from such wheel with a large change in direction of travel onto a co-ordinated take-out screw and means for selectively separating specific glassware items from the inspected glassware without interrupting the overall transport of glassware. Also, a method for handling glassware involving introducing, transporting and removing glassware from a transport wheel in a timed relationship as well as removing selected glassware from the stream of glassware being processed.

3,710,938
APPARATUS AND METHOD FOR MEASURING THE RATE OF CHANGE OF THICKNESS OF DIELECTRIC MEMBERS

Gerald F. Scherf, Holland, Ohio, assignor to Owens-Illinois, Inc.

Filed Nov. 29, 1971, Ser. No. 202,767
Int. Cl. B07c 5/34
U.S. Cl. 209—111.5 10 Claims



Apparatus for detecting the presence of relatively narrow, thin sections in the sidewall of glass containers and rejecting those containers which exhibit such narrow, thin sections. A radio frequency source coupled to a transmitting antenna positioned adjacent the container establishes a radio frequency field extending through the wall of the glass container. The wall of the container is moved relative to a receiving probe. The instantaneous magnitude of the field received by the probe provides an indication of the thickness of the container sidewall. The signal received is amplified and the first derivative of the voltage with respect to time is taken. The rate of change of the voltage is a direct indication of the change in thickness of successive sections of the container sidewall being gauged. Those containers which exhibit a rate of change of voltage with respect to time above a preset level are rejected as being defective.

3,710,939
FROTHING AGENTS FOR THE FLOATATION OF ORES

Juraj J. Hostynek, Midland, Mich., and Collins, David J., Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.

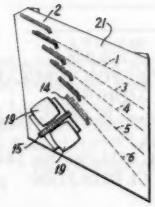
Filed June 15, 1970, Ser. No. 46,498
Int. Cl. R03d 1/02
U.S. Cl. 209—166 4 Claims

Polyoxypropylene adducts of glycerine, hexanetriol, diglycerol, sorbitol, pentaerythritol, a monosaccharide, a disaccharide or mixture thereof having at least about 5 or more oxypropylene units and a molecular weight below about 2,100 have been discovered to be excellent frothing agents for the floatation of ores.

3,710,940
SIZING APPARATUS WITH FREE SPACE ABOVE THE SEPARATING SYSTEM OF OBSTACLES

Nils Peder Mogensen, Mjolnartorpsvagen 14, Djursholm, Sweden

Filed May 22, 1969, Ser. No. 826,988
Claims priority, application Sweden, June 4, 1968, 7473/68
Int. Cl. B07b 1/28
U.S. Cl. 209—315 3 Claims

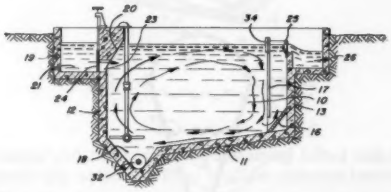


A sizing device, for classifying particles, comprises a frame which is substantially rhombic in side elevation or vertical longitudinal section, and carrying a number of screens, bars, or similar elements having openings larger than the arriving particles. Vibrating means are secured to the frame beneath the screens or the like and symetrically with respect to the shorter diagonal of the substantially rhombic frame, so that the space above the topmost screen is free and substantially unobstructed.

3,710,941
METHOD AND APPARATUS FOR TREATING SEWAGE

Haskal Brociner, Chicago, Ill., assignor to FMC Corporation

Filed April 8, 1971, Ser. No. 132,435
Int. Cl. B01d 21/24
U.S. Cl. 210—84 5 Claims

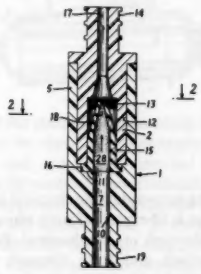


Elimination of heavy solids such as grit from sewage streams prior to introduction into treatment tanks is necessary because such solids interfere with normal operations. Substantially all of the heavy solids, irrespective of particle size are removed by a process and apparatus wherein raw sewage is introduced into a tank, the preferred form of which has a bottom sloping downwardly from the far side to a trough adjacent a first side wall, with even distribution along said first side wall, a predetermined small range of liquid level variation is maintained by flowing effluent sewage over a weir extending above the full length of the top of the side wall opposite said first side wall, air is introduced with even distribution adjacent to said trough and along said first side wall to induce circulatory flow of liquid and light weight solids upwardly and then in the direction of said opposite side wall, turning the circulatory flow direction downwardly toward the tank floor by a baffle spaced from said opposite side wall and positioned transverse to the direction of liquid flow through said tank, to effect separation of light weight solids and flowing the sewage suspension under said baffle and upwardly for removal by flow over said weir.

3,710,942
VALVE FOR FLUID LINES AND STRUCTURES CONTAINING THE SAME

David Rosenberg, Glen Cove, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Continuation-in-part of Ser. No. 643,083, June 2, 1967, Pat. No. 3,447,478, and a continuation-in-part of Ser. No. 710,609, March 5, 1968, Pat. No. 3,572,375, and a continuation-in-part of Ser. No. 787,539, Dec. 27, 1968, abandoned, and a continuation-in-part of Ser. No. 1,499, Jan. 8, 1970, Pat. No. 3,650,093. This application June 29, 1970, Ser. No. 50,686
Int. Cl. B01d 35/02
U.S. Cl. 210—136 41 Claims



A valve is provided for use in fluid lines as a relief valve and

in T-connectors with syringes and like injecting devices in the administration of medicaments, to supply or withdraw fluids in a volume greater than the capacity of the syringe.

3,710,943

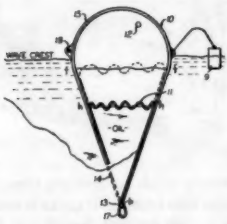
VARIABLE DISPLACEMENT FENCE FOR OIL SPILL CONTAINMENT AND RECOVERY

William M. Davidson, 57 Briarcliff Road, and Howard W. Cole, Jr., 12 Vale Drive, both of Mountain Lakes, N.J.

Filed March 5, 1970, Ser. No. 16,692

Int. Cl. C02b *9/02*

U.S. Cl. 210—242 **4 Claims**



A flexible, inflatable, elongated barrier useful for the containment, separation and recovery of oil spilt on water is constructed in the form of a tunnel inside of which there is a continuous passage for oil that enters the barrier beneath the waters surface on the upstream side and leaves the barrier on either end of the tunnel. The barrier is weighted at the bottom by suitable ballast means and buoyed at the top by long, continuous air chambers. Lengthwise cables are attached along the top and bottom of the barrier for towing and control purposes. The barrier can be submerged during emergency conditions and is constructed for roll-up on a reel either as a continuous single element of multiplicity of sections.

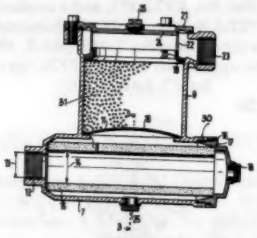
3,710,944

DEVICE FOR LIBERATING WATER OF MECHANICAL AND CHEMICAL IMPURITIES CONTAINED THEREIN

Heinrich Emil Budesheim, Berliner Strasse 15, Lohfelden, Germany

Filed July 15, 1970, Ser. No. 54,908

Claims priority, application Germany, July 18, 1969, P 19 36 615.5



Water containing suspended mechanical impurities and also chemical impurities is liberated of such impurities by directing the water first through a mechanical filter trapping the mechanical impurities and then through a chemical filter removing the chemical impurities from the water.

The disclosed device comprises a generally cylindrical housing in which is mounted a sleeve made of a rigid water pervious filter medium, one end of the housing opening into one end of the filter. A container containing á chemical agent capable of removing the chemical impurities is in communication with the interior of the housing. The water to be liberated of impurities is first directed into the filter sleeve and after passing through the wall thereof flows from the housing into the container to pass the chemical filter therein. It is discharged through an outlet of the container now liberated of both types of impurities.

3,710,945

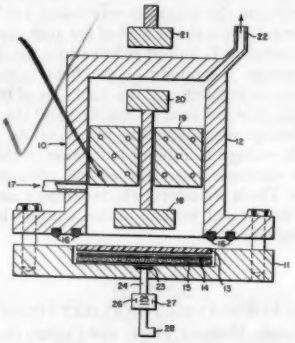
PRESERVATION OF POLYAMIDIC MEMBRANES

Paden F. Dismore, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 26, 1969, Ser. No. 880,300

Int. Cl. B01d *31/00*

U.S. Cl. 210—321 **31 Claims**



Selectively permeable, polymeric membranes for use in the reverse osmosis separation of components of aqueous mixtures and solutions, particularly saline and brackish water, are chemically treated to preserve their permeability characteristics and to protect against loss thereof during the obtention of a watertight seal with the potting compounds generally employed in permeation separation devices. The desired results are achieved by effecting a substantial replacement of membrane-associated water with an inert organic medium exhibiting a lower volatility than water. Depending on the degree of hydrophilicity and water solubility of the organic medium, replacement of the membrane-associated water is accomplished by direct contact including successive contacts of the water-wet membrane with aqueous solutions of increasing organic medium concentration and/or indirect contact including successive contacts of the membrane with organic media of decreasing hydrophilicity. Reversal of the replacement process to reintroduce water to the membrane structure restores the operability of the members and renders them effective for their intended desalination and purification functions.

3,710,946

WELDED CONNECTORS FOR TUBULAR SEPARATOR MODULE

Ernest Robert Sawyer, Solana Beach, Calif., assignor to Calgon Corporation, Pittsburgh, Pa.

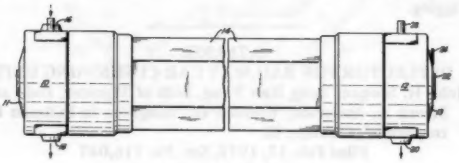
Filed May 18, 1971, Ser. No. 144,463

Int. Cl. B01d *31/00*

U.S. Cl. 210—321 **4 Claims**

A unitary molded header element is disclosed accommodating a plurality of fittings for internally coated reverse osmosis

or ultrafiltration tubes. A turn-around channel is provided for each pair of tubes inserted in the header. The turn-around channel is integral in the mold; it may be sealed from the butt end with a plug which may be sonic welded to the header. The header enables assembly of a unique module.



3,710,947

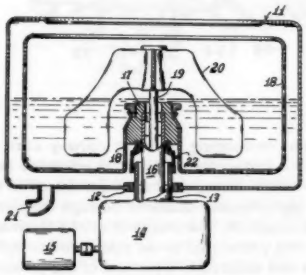
SHAFT SEAL FOR USE IN WASHING MACHINES

Frank J. Charhut, Chicago, Ill., assignor to Chicago-Allis Mfg. Corp, Chicago, Ill.

Filed March 4, 1971, Ser. No. 120,877

Int. Cl. F16r *41/00*

U.S. Cl. 210—380 **5 Claims**



A shaft seal for use in washing machines which includes a rigid body having an expansible skirt responsive to centrifugal force to minimize friction when the washing machine does not contain water.

3,710,948

SELF-SUSTAINING POCKET TYPE FILTER

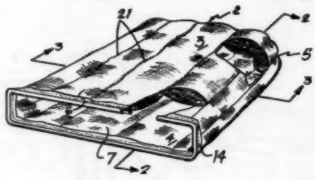
Robert W. Sexton, Louisville; Paul L. Brooks, Waddy, and Jack M. Carey, Louisville, all of Ky., assignors to American Air Filter Company, Inc., Louisville, Ky.

Filed June 10, 1970, Ser. No. 44,981

Int. Cl. B01d *46/02*

U.S. Cl. 210—484 **7 Claims**

An improved pocket type filter formed from faced sections of expansible-compressible filter medium sheets, the filter medium sheets having spaced longitudinally extending filter medium compression seams to compress the medium along the seams and to provide self-sustaining lofted side-by-side longitudinally extending filter medium columns between the seams.



3,710,949

APPARATUS FOR CONTINUOUSLY SEPARATING A SLUDGE-CONTAINING MIXTURE OF TWO LIQUIDS

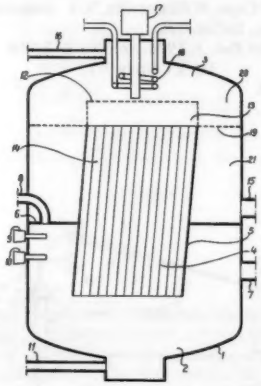
Jakob Murkes, Bandhagen, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Oct. 8, 1970, Ser. No. 79,056

Claims priority, application Sweden, Nov. 5, 1969, 15138/69

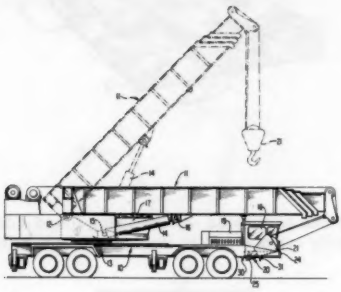
Int. Cl. B01d *21/00*

U.S. Cl. 210—522 **5 Claims**



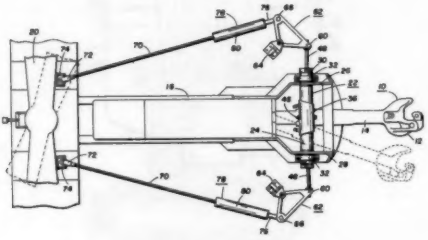
A first chamber for static pre-separation of the mixture and a second chamber for static after-separation are located one above the other and are interconnected by a plurality of straight, substantially vertical flow channels. Each such channel has a pair of opposed walls which are spaced from each other a distance of about 1 to 5 mm. and which are preferentially wettable by the liquid (e.g., oil) dispersed in the other liquid (e.g., water), and the pre-separation chamber is provided at the bottom with a sludge outlet.

3,710,950
MOBILE CRANE HOOK BLOCK STORAGE COMPARTMENT
Donald R. Pottorff, Mercersburg, Pa., and William E. Wright, Hagerstown, Md., assignors to Walter Kidde & Company, Inc., Clifton, N.J.
Filed Dec. 7, 1970, Ser. No. 95,683
Int. Cl. B66c *13/00*
U.S. Cl. 212—1 **10 Claims**



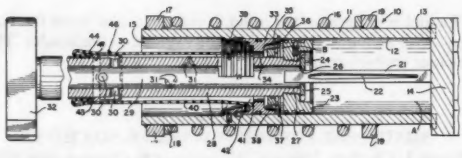
A storage compartment or trough is provided near the forward end of the crane carrier to receive and support a rigged hook block. The hook block is stored out of the line of vision of the carrier operator and the danger of the hook block swinging during road travel is eliminated. The hook block is self loading and unloading with relation to the storage compartment.

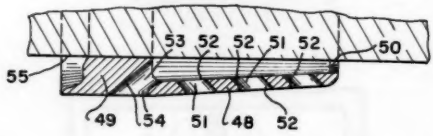
3,710,951
COUPLER POSITIONING DEVICE
Geoffrey Wilton Cope, Williamsville, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Feb. 3, 1971, Ser. No. 112,158
Int. Cl. B61g *7/12*
U.S. Cl. 213—15 **6 Claims**



A coupler positioning device is used to position the coupler to achieve "face on" or "in line" coupling or as near to this condition as possible. The coupler is not necessarily over the center line of the track but is in the position wherein the center lines of two adjacent couplers of two similar cars are coincident. A mechanical arrangement is provided to be used in conjunction with the truck bolster and fixed sill construction of a long, high capacity freight car. The device has particular utility with "end-of-car" cushioning devices where space for a positioning device is very limited. Motion of the mechanism is initiated from a bracket or brackets attached to the bolster of the truck. It is transmitted through arm means, lever means and rod means and is applied directly to the shank of the coupler forward of its pivotal connection to the draft rigging.

3,710,952
DEFLECTOR FOR RAILWAY CAR CUSHIONING UNIT
John H. Spence; Tung Han Yang, both of Munster, Ind., and Steven A. Anderson, Elwood, Ill., assignors to Pullman Incorporated, Chicago, Ill.
Filed Feb. 17, 1971, Ser. No. 116,047
Int. Cl. B61g *9/08, 9/16*
U.S. Cl. 213—43 **2 Claims**



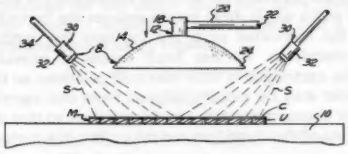


A hydraulic cushioning unit for railway cars includes a cylinder with a piston and piston rod assembly reciprocable therein and which during operation provides for the flow of fluid from a high pressure chamber through the piston rod to a low pressure reservoir. The reservoir is of a flexible boot type having one end connected to an intermediate cylinder head and its other end secured to a portion of the piston rod. Fluid from the high pressure chamber flows through the piston rod and outwardly through radial ports to the reservoir. A cylindrical deflector is positioned on the piston rod in the area of the ports and includes a plurality of openings or slots which are arranged to divide and deflect the hydraulic fluid into a plurality of dispersed streams providing a reduced velocity impact against the inner surface of the flexible boot.

3,710,953
APPARATUS FOR VACUUM PICK-UP OF POROUS MATERIALS
Jerry Kirsch, 36 Beacon Hill, Grosse Pointe Farms, Mich.
Filed Sept. 16, 1971, Ser. No. 181,074
Int. Cl. B66c *1/02*
U.S. Cl. 214—1 BS **6 Claims**

Porous materials, such as cloth or unglazed ceramics or porous plastics which on account of their porosity defy ordinary vacuum pick-up, are made temporarily imperforate by applying to them a temporary coating of liquid, such as water, whereupon their porosity is momentarily sufficiently inhibited to permit their pick-up and transfer by suction, as by a suction

cup device. The liquid coating is deposited either by rolling or spraying the liquid onto the porous material either from above



it (FIG. 1) or from beneath it either for a single layer (FIG. 2) or for a plurality of layers thereof (FIG. 3).

3,710,954

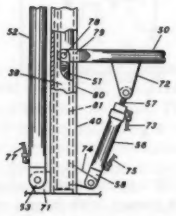
APPARATUS FOR HANDLING WELL ELEMENTS

Stanley O. Hutchison, Bakersfield, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 865,261, Oct. 10, 1969, abandoned. This application Nov. 24, 1971, Ser. No. 201,773

Int. Cl. E21b *19/00*

U.S. Cl. 214—2.5 **12 Claims**



Apparatus for picking up and laying down elongated well elements such as pipe, tubing and sucker rods characterized by a rotatably mounted upright means carrying supporting means telescopically extendible and retractable along the longitudinal axis of the upright means, a boom having one end pivotally connected to the supporting means, means for pivoting the boom with respect to the longitudinal axis of the supporting means to raise and lower the other end of the boom and gripper means on the boom for releasably holding an elongated well element generally parallel to the longitudinal axis of the boom.

3,710,955

MATTRESS HANDLING APPARATUS

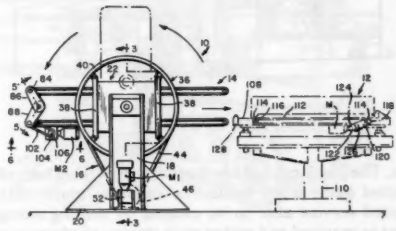
Howard E. Redman, Weymouth, and Frederick E. Kalning, Quincy, both of Mass., assignors to Mathewson Corporation, Quincy, Mass.

Filed Dec. 4, 1970, Ser. No. 95,236

Int. Cl. B65g *57/11*

U.S. Cl. 214—1 Q **3 Claims**

Mattress handling apparatus comprising a cradle having spaced parallel grids adapted to receive a mattress therebetween, said cradle being rotatable about a horizontal axis to present one open end in a position to receive the mattress and when the mattress is wholly contained to an inverted position to present the other open end to said position for discharge of the mattress. There are conveyor belts on the grids for moving the mattress onto the cradle and off the cradle and reversibly drivable mechanism for moving the grids toward and away from each other to clamp the mattress prior to turning and unclamp it after turning. The apparatus is



adapted to be used in conjunction with mattress closing apparatus to receive a mattress assembly which has been sewn on one side, invert it, return it to the closing apparatus for sewing on the other side and finally to effect discharge of the completed mattress.

3,710,956

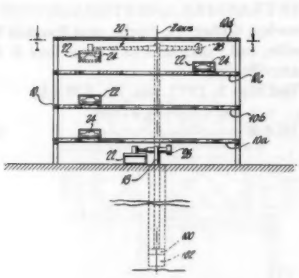
VEHICLE PACKING FACILITY WITH A VERTICALLY EXTENSIBLE MAST

Hans P. Meyer, 1 Willowbrook Road, White Plains, N.Y., and Hans H. Joseph, 20 Dongan Place, New York, N.Y.

Filed July 29, 1971, Ser. No. 167,341

Int. Cl. E04h *6/06*

U.S. Cl. 214—16.1 CE **20 Claims**



A multi-level automated parking facility in which automobiles are parked in pallets located at preselected areas surrounding a vertical shaft. A mast carrying a transverse book is movable vertically within the shaft and can be rotated to position the boom in a desired angular orientation. The boom is also axially movable to place its end over a selected pallet location, after which a lift carriage carried at the end of the boom may be latched onto or released from the pallet.

3,710,957

METHOD AND APPARATUS FOR LOCKING VEHICLES ON MOVABLE PLATFORMS

George Milton Small, 310 Lake Boone Trail, Raleigh, N.C.

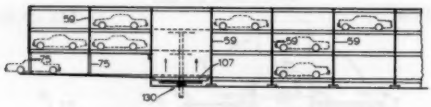
Filed Sept. 14, 1970, Ser. No. 71,800

Int. Cl. E04h *6/06*

U.S. Cl. 214—16.1 CC **23 Claims**

A parking system and method adapted to complete automation is provided. Vehicles are stored on individual storage

platforms occupying parking spaces arranged by parallel rows and in defined areas on the floors of a multi-floor building. Certain rows for vehicle movement are designated as aisles and the spaces cross-wise make up what are designated as



bays. The platforms are mechanically moveable laterally and a selected space is left unfilled in each bay which enables any selected service aisle to be cleared by shifting storage platforms as required and makes each storage platform accessible. Each area on each floor has its own aisle clearing mechanism. During parking and discharge operations which may be completely automatic the platforms are shifted as required and the vehicle is mechanically moved down a selected cleared service aisle from or to an elevator which services that particular aisle on each floor. Plural independent elevators are employed. Each elevator is adapted to mount an elevator platform and at the ground or base level each elevator platform is detachable from the elevator and is mechanically moveable laterally independently of the elevator itself. A particular elevator platform is thereby enabled to either mate with an elevator which mates with a particular entranceway or with an elevator which mates with a particular service aisle. Alternatively, the elevator platform may be moved to a base level position which mates with no elevator. Each elevator after receiving an incoming vehicle can rotate **180°** for discharge orientation of the vehicle and mechanical means are provided for moving the vehicle on and off the elevator platforms.

3,710,958

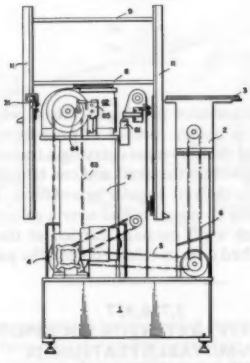
PARTS TRANSFER AND STORAGE UNIT

Norman R. Crowley; Gilbert N. Fuchs, and Randall W. Wink, all of Evansville, Ind., assignors to Evana Tool & Engineering, Inc., Evansville, Ind.

Filed May 3, 1971, Ser. No. 139,553

Int. Cl. B65g *47/00*

U.S. Cl. 214—16.4 R **10 Claims**



The invention relates to a parts transfer and storage unit wherein individual parts such as printed circuit boards which are to have various manufacturing processes performed thereon may be transferred to cartridges and stored therein for movement to other locations within the manufacturing plant. The cartridges are mounted for vertical sliding movement in a plurality of guides mounted on a rotating stand. Latch means is provided for securing the cartridges within the guideways and a single drive means indexes the cartridge vertically as the individual parts are fed into the cartridge or removed therefrom. Further latch means is provided for securing the cartridges in their elevated positions so that the rotary holder may be rapidly indexed from one cartridge to the next for engagement with the drive means so that unloading or loading of the cartridges can take place at a rapid rate.

3,710,959

SILO CONTAINER

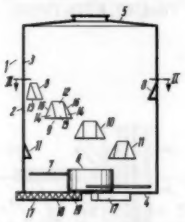
Hans Gessler, Aalen, Germany, assignor to Schwabische Huttenwerke GmbH, Wasseralfingen, Germany

Filed Oct. 12, 1970, Ser. No. 79,991

Claims priority, application Germany, Oct. 14, 1969, P 19 51 754.5

Int. Cl. B65g *65/46*

U.S. Cl. 214—17 D **18 Claims**



A silo container with a substantially tubular upright portion having friction brake means with lateral marginal areas connected to the inner wall surface of said tubular portion so as to form obtuse angles therewith.

3,710,960

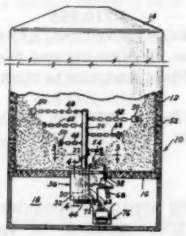
BOTTOM DISCHARGE MEANS FOR SILO

Aaron Z. Stauffer, Ephrata; John H. Herr, Lebanon, both of Pa.; James W. Lepley, and James C. Zimmerly, both of Smithville, Ohio, assignors to Flying Dutchman, Inc., Smithville, Ohio

Filed Aug. 12, 1971, Ser. No. 171,153

Int. Cl. B65g *65/46*

U.S. Cl. 214—17 DA **16 Claims**



Bottom discharge means for a silo having a discharge opening in the bottom adjacent the center of the silo, and an auger

extending upward from the bottom is rotated by power means to move material down to the discharge opening. Shield means is spaced above the discharge opening to provide a lateral passage beneath the shield to the discharge opening to prevent clogging the same. A housing below the bottom of the silo supports bearings for the auger shaft and drive means, and a discharge chute is formed by said housing and a closure to guide material to discharge means.

3,710,961

TRANSFER DEVICE

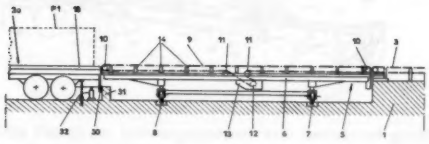
Jacques Bomstein, Paris, France, assignor to Etablissements J. Berthelat et Fils, Paris, France

Filed June 17, 1970, Ser. No. 46,891

Claims priority, application France, June 17, 1969, 6920059; Dec. 26, 1969, 6945102

Int. Cl. B65g *67/02*

U.S. Cl. 214—38 B **7 Claims**



A transfer device is provided for the loading and unloading of loads from a first station, e.g., a transport vehicle, to a second station, e.g. a loading platform. The device essentially comprises a transfer trolley including a main body having a plurality of transfer conveyor chains driven by a driving unit, and an extractor-pusher mechanism actuated by the conveyor chains via a transmission device. The extractor-pusher mechanism initially is placed beneath the load and, by means of a thrust or traction force imparted by the transmission device, transfers the load from the first station onto the main body for displacement of the load to the second station. The transfer trolley is further provided with rollers movable along rails for transverse movement of the trolley relative to the respective stations.

3,710,962

LIFT DEVICE

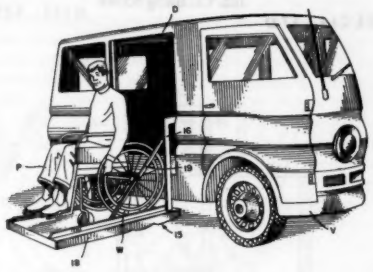
John H. Fowler, Jr., 2648 Hillside Lane, Evanston, Ill.

Continuation-in-part of Ser. No. 874,273, Nov. 5, 1969, Pat. No. 3,613,917. This application Feb. 11, 1971, Ser. No. 114,517

Int. Cl. B60p *1/44*

U.S. Cl. 214—75 R **9 Claims**

A lift device particularly suitable for lifting wheel chairs and the like into a vehicle. The lift device includes a platform which can be used to raise and lower objects between the ground and the floor of the vehicle, and when the lift device is not being used, the platform can be automatically raised to a vertical position to close the doorway provided in the vehicle. The platform is pivotally supported at the ends of a pair of generally L-shaped lift arms, and the other end of each of the lift arms is slidably secured to a housing which is mounted for vertical sliding movement on a generally vertical support post. A hydraulic motor is operatively connected to each of the housings for sliding the housings along their respective support posts to raise and lower the platform between the ground and the vehicle, and another hydraulic motor is operatively connected between each of the slide housings and the lift arms for moving the lift arms horizontally inwardly and outwardly with respect to the vehicle. A cable extends from the platform to an electrically operated wind-up pulley for pivoting the



platform about the lift arms between horizontal and vertical positions.

3,710,963

APPARATUS FOR EXTRACTING AND TRANSFERRING MATERIALS

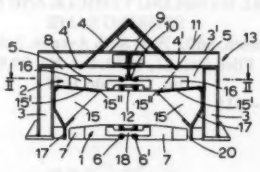
Heinz Losch, Dulmen, and Heinrich Mecklenbrauck, Lunen-Sud, both of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed March 18, 1971, Ser. No. 125,632

Claims priority, application Germany, April 24, 1970, P 20 20 018.4

Int. Cl. B65g *65/42*

U.S. Cl. 214—17 D **5 Claims**



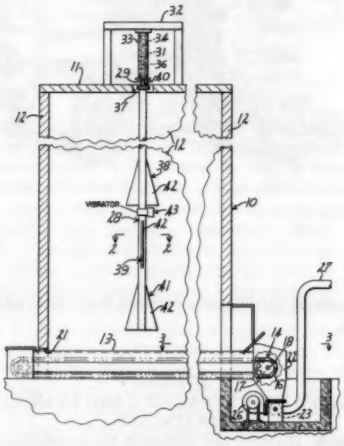
An apparatus for extracting and transferring materials in bunkers or similar storage containers. The apparatus is composed of a framework supported on the floor of the bunker and a scraper chain conveyor with an upper and a lower run. The scraper elements of the lower run are in scraping relationship to the bunker floor and the scraper elements of the upper run are in scraping relationship with inclined floor surfaces separated by an opening disposed centrally of the conveyor. Centrally above the opening there is a roof-shaped cover plate which has apertures alongside its side edges through which material heaped on the cover plate can pass to the upper run of the conveyor. Some of the scraper elements are of greater lateral width than the others and these wider elements extend laterally outwardly beyond the side edges of the cover plate. Material passed to the upper run of the conveyor is thus in turn passed through the opening, after engagement with the scraper elements, to the lower run of the conveyor.

3,710,964

APPARATUS FOR STORING AND FEEDING BULKY MATERIALS

Edward T. Douglass, Jr., 2709 5th Ave. South, Birmingham, Ala.

Filed June 23, 1971, Ser. No. 155,941
Int. Cl. B65g 65/42
U.S. Cl. 214—17 D **4 Claims**



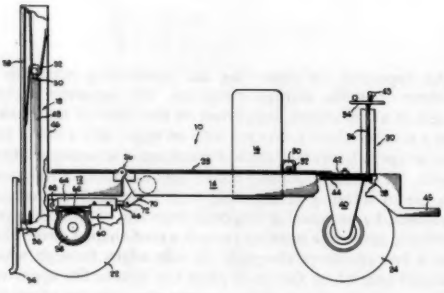
A storage and feeding bin having a discharge opening at bottom thereof. A vertical shaft depends from top of bin with lower end adjacent and above opening. Upper end of the shaft is supported by resilient support with lower end depending freely. Angularly spaced agitator blades extend radially and vertically from shaft and vibrator carried by shaft within bin to vibrate shaft and blades carried thereby.

3,710,965

MATERIAL HANDLING VEHICLE AND METHOD OF STORING SAME

James K. Joosten, 8601 West 85th Avenue, Schererville, Ind.

Filed Dec. 21, 1970, Ser. No. 99,920
Int. Cl. B60p 1/64
U.S. Cl. 214—515 **3 Claims**



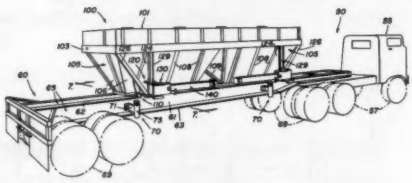
A self-storing material handling and transporting vehicle of the type having a power source which acts as a counterweight. The combination counterweight and power source is movable on the frame of the vehicle so as to facilitate proper balance, traction, conveyance and storage of the vehicle. In a preferred embodiment the frame of the vehicle is divided into two portions whereby one portion may be pivoted about the other so as to place the vehicle in the most compact position for transport from place to place and/or storage.

3,710,966

SYSTEM FOR STORING AND TRANSPORTING LADINGS

Ramojus P. Vaitys, Evanston, Ill., assignor to General American Transportation Corporation, Chicago, Ill.

Filed Feb. 16, 1971, Ser. No. 115,612
Int. Cl. B60p 1/64
U.S. Cl. 214—515 **24 Claims**



A self-supporting container is removably mounted on a truck for transportation to and from a support surface, the truck having jacks thereon for transferring the container between the support surface and the truck, and the container having two pairs of retractable leg assemblies for supporting itself upon the support surface, each leg assembly including a horizontally pivotable housing and a vertically pivotable leg, and being shiftable between a storage configuration with the housing and the leg extending longitudinally alongside the container and an intermediate configuration with the housing extending laterally outwardly of the container and the leg hanging downwardly from the housing. In transferring the container from the truck to the support surface, the container is raised by the jacks and the leg assemblies are shifted from their storage configurations to their intermediate configurations, then the container is lowered until the legs contact the support surface whereupon elongated pivot pin slots in each leg accommodate the downward vertical movement of the housings with respect to the legs to a supporting configuration wherein abutment surfaces on the leg assemblies and the container cooperate to lock the leg assemblies against any further movement until the container is raised from the support surface.

3,710,967

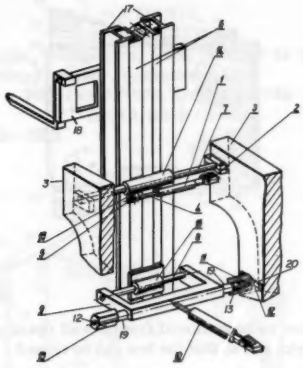
ASSEMBLY FOR LATERAL SHIFTING OF THE LOAD SUPPORT OF A HIGH LIFT TRUCK

Stoytcho Grigorov Stoytchev; Gueorgui Kirilov Stoilov; Tsani Konstantinov Tsanev; Zdravko Marinov Gueorguiev, and Gueorgui Yordanov Stoyanov, all of Sofia, Bulgaria, assignors to DSO Balkancar, Sofia, Bulgaria

Filed June 16, 1969, Ser. No. 833,283
Int. Cl. B66f 9/10
U.S. Cl. 214—674 **4 Claims**

A load-supporting carriage of a lift truck is vertically slidable on a mast mounted for lateral shifting and forward or rearward tilting on a pair of parallel horizontal rods, extending transversely to the truck frame, by means of a pair of sleeves riding on these rods. The upper rod is rigid with the frame while the corresponding sleeve is secured to a hydraulic jack for lateral shifting; the lower rod is mounted between the arms of a yoke which is secured to another jack for the tilting of the

mast and whose sides are provided with adjustable end stops in the form of threaded retaining cups with spring-loaded balls



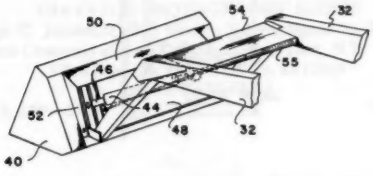
projecting therefrom into engagement with associated guide tracks on the lateral walls of the truck frame.

3,710,968

BUCKET LEVEL INDICATOR

James T. Clevenger, Lancaster, and John L. Stohler, Ephrata, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Sept. 30, 1971, Ser. No. 185,027
Int. Cl. E02f 3/00
U.S. Cl. 214—761 **11 Claims**



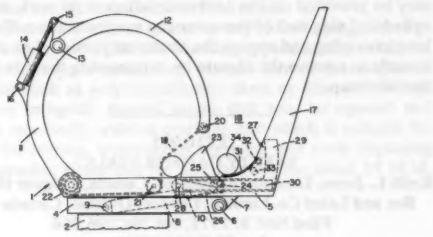
A bucket level indicator employed within a front end loader for relating to an operator the relative angular position of a bucket pivotally mounted forwardly within a boom structure carried by said loader. The bucket level indicator of the present invention is comprised of an indicator moveably mounted for lateral back and forth movement along a transverse member extending between a pair of boom arms of the boom structure. A tension spring is fixed to said indicator for normally biasing same towards one side of said transverse member and a cable moveably responsive to the pivotal movement of said bucket is also fixed to said indicator. Thus, the spring and cable cooperatively coact to articulate the indicator laterally back and forth along said transverse member such that the relative position of the indicator with respect to the transverse member indicates to the operator the relative angular position of the front mounted bucket.

3,710,969

LOG CARRIER OR BUNK

John E. Eynon, Port-Arthur, Ontario, Canada, assignor to Abitiba Paper Company Ltd., Toronto, Ontario, Canada

Filed Oct. 12, 1971, Ser. No. 188,537
Claims priority, application Canada, Oct. 13, 1970, 095354
Int. Cl. B66c 23/00
U.S. Cl. 214—130 R **9 Claims**



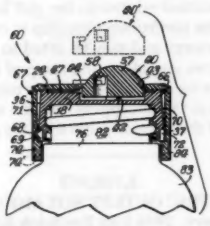
A log carrier includes a base with an arm extending upwardly from one side of the base. The arm is shaped to form a part-encircling configuration overlying the base with the free end of the arm spaced above the base adjacent to the opposite side thereof to form a log-receiving throat. A flexible element extends between the base and the arm with means for tensioning the flexible element. A displaceable projection normally blocks the throat and log thrusting means are adjacent to the opposite side of the base for thrusting a log from the opposite side of the base past the projection into engagement with the flexible element within the arm.

3,710,970

SAFETY CLOSURE

Robert J. Elfline, Bloomingdale, Ill., assignor to Research and Safety Devices Corporation, Chicago, Ill.

Filed July 28, 1971, Ser. No. 166,744
Int. Cl. A61j 1/00
U.S. Cl. 215—9 **10 Claims**



A safety closure is disclosed for closing the opening in a container such as a bottle having a threaded neck. The closure includes a pair of inner and outer, cup-shaped caps which are assembled by shifting the inner cap axially into the outer cap. The caps are retained in assembled relation by interlocking shoulders which are respectively carried on the side walls of the caps and which are arranged to interlock after a predetermined amount of telescoping movement of the caps. After assembly, the caps are capable of relative rotational movement

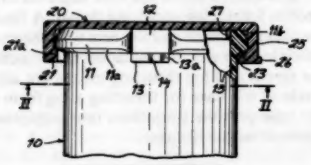
except when a key which is formed with and releasably carried by the end wall of the outer cap, is engaged with a recess in the end wall of the inner cap and a complementally-shaped opening in the end wall of the outer cap. Assembly of the caps is facilitated by a taper on the cylindrical side wall of the inner cap, such taper also reducing the area of contact available for the transmission of torque to the inner cap from the outer cap if the outer cap is compressed in an effort to remove the closure. A clearance is provided between the interlocking shoulders so that the caps may be assembled without regard to the orientation of the key and the recess. An abutment portion may be provided on the container adjacent its neck, and the cylindrical side wall of the outer cap may be made sufficiently long to overlap and engage the abutment portion if an attempt is made to remove the closure by compressing the side wall of the outer cap.

3,710,971

SAFETY CAP FOR VIALS

Keith L. Jones, London 74, Ontario, Canada, assignor to Jones Box and Label Co. Limited, London, Ontario, Canada

Filed Nov. 8, 1971, Ser. No. 196,366
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **10 Claims**



A vial with an open mouth surrounded by an annular flange is engageable by a lid whose rim is formed with an inner annular shoulder underlying that flange for positive interlocking to seal the vial. The flange has a gap, extending over an arc of roughly 10°, and is provided immediately below that gap with an external ramp coacting with a similar internal ramp on the shoulder of the cap when the latter is rotated into a predetermined angular position relative to the vial. In that position, the portion of the rim confronting the gap is cammed outwardly by the coacting ramps and may be lifted to disengage the cap from the vial whose gap clears the ramp of the cap rim. Complementary indexing formations on the two ramps may snap into engagement in the uncapping position to indicate the correct alignment of the internal ramp with the gap.

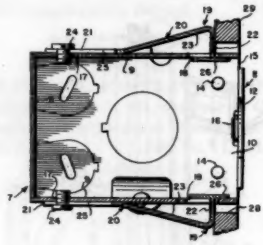
3,710,972

ELECTRIC OUTLET BOX MOUNTING

Robert Lionel Barry, 2916 East Randolph Road, Silver Spring, Md.

Filed Jan. 26, 1971, Ser. No. 109,910
Int. Cl. H02g *3/08*
U.S. Cl. 220—3.6 **4 Claims**

An electric box outlet with improved mounting means enabling the mounting of the box in an opening of a wall without the use of tools or fastenings, and with the open front of the box disposed flush with the front face of the wall, irrespective of the thickness of the wall. The mounting means includes a pair of mounting elements for engaging the front face of the wall and a second pair of mounting elements for engaging the rear face of the wall, and which last mentioned mounting elements are adjustable longitudinally of the box to compensate for variations in the thickness of walls. Said adjustable mounting elements are capable of being retracted to



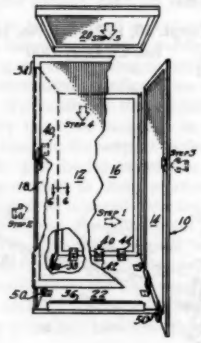
enable the box to be removed from a wall opening, without damage thereto, and so that the box can be reused.

3,710,973

SHIPPING AND DISPLAY CONTAINER

Hobart T. Franks, 920 Peachtree Battle Avenue N.W., Atlanta, Ga.

Filed Oct. 21, 1970, Ser. No. 82,580
Int. Cl. B65d *7/00*
U.S. Cl. 220—4 R **3 Claims**



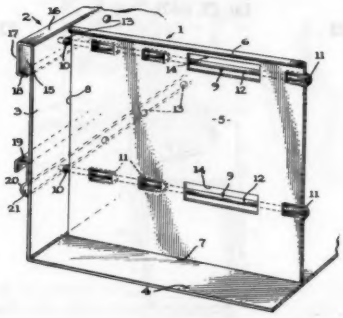
A multi-sided, large shipping container which also serves as a display container once the merchandise is placed on sale such as in a supermarket or other store. Particularly useful for shipping and selling merchandise which may be handled by forklift trucks, the container has four wall sections each made from rigid frames and panels of plywood or other material with interlocking brackets at the bottom edges fastened to the reinforced bottom which has a pallet to accommodate the the fork on a forklift truck and may or may not have wheels on the bottom. A one-piece top has edges which fit down over the respective upper edges of each wall section for quick detachment therefrom. Other brackets are provided at intermediate heights on selected wall sections to latch them together. The merchandise which may be in the form of smaller boxes or cartons of goods or not containerized is stacked on the bottom of the present container which resembles a pallet. Then the wall sections are assembled in place by aligning interlocking brackets and inserting interlocking pins

on one bracket into openings in matching bracket portions. Then the entire container may be lifted by a forklift truck and transported by truck, aircraft or boxcar to the store where it is placed for display and actual sale of the merchandise by removing one or more of the wall sections.

3,710,974
DRAWER DIVIDER

Carl H. Hage, Youngstown, Ohio, assignor to The General Fireproofing Company, Youngstown, Ohio

Filed Oct. 7, 1970, Ser. No. 78,746
Int. Cl. B65d *1/24*
U.S. Cl. 220—22.4 **6 Claims**

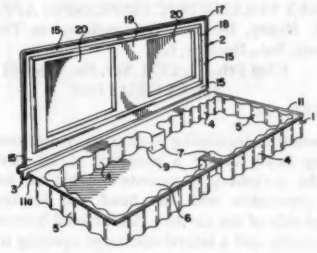


A drawer divider includes self-contained mounting means defined by a displaceable lock bar, the ends of which normally project from the side edges of the divider to engage selected openings provided in the drawer side walls. To remove or relocate the divider, an intermediate section of the lock bar is manually deflected transversely to withdraw the locking ends of the bar from the drawer openings.

3,710,975
TRAYS FOR PHOTOGRAPHIC SLIDES

George E. Jansen, Cedar Grove, N.J., assignor to The Pantasote Company of New York, Inc., New York, N.Y.

Filed Sept. 20, 1971, Ser. No. 181,869
Int. Cl. B65d *43/16*
U.S. Cl. 220—31 S **7 Claims**



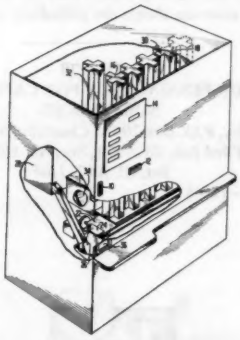
One-piece trays for shipping, storing, and protecting photographic slides after each use and having an integrally hinged cover contains slide-receiving cavities that are defined by cooperation of side-walls, end walls, a bottom, and side edges of protrusions intermediate the side-walls and extending toward each other only part-way across the tray. The hinges between the cover and the body of the tray are integrally formed with two valleys each of half-circular cross-section separated by a ridge that extends the length of the valleys and of the side edge of said tray. The hinges preferably have the walls of said valleys of graduated thickness being thinnest at the bottom thereof. The cover has upwardly extending bosses over the central portions of the cavities to protect the transparent portions of said slides from damage and the sides are of wave-like configuration with vertical crests.

The present invention relates to trays for shipping and storing photographic slides and the like. It particularly relates to one-piece trays of molded or vacuum-formed thermoplastic material such as polyvinylchloride sheet or film which trays have an integrally formed cover that may be opened and closed repeatedly without cracking and which is suitable for slides for storing, transporting, shipping and even displaying photographic slides and the like such as the usual 35 M.M. slides.

3,710,976
CURRENCY DISPENSER

Justin J. Guidi, Weston, and Charles F. Middleton, Jr., Sudbury, both of Mass., assignors to Digital Security Systems, Inc., Natick, Mass.

Filed Nov. 25, 1970, Ser. No. 92,824
Int. Cl. B65g *59/00*
U.S. Cl. 221—67 **11 Claims**



A unit for storing bills in currency dispensing systems. Successive individual bills or groups of bills are oriented at right angles to each other in a stack above a blocking plate. When one of two sets of doors in the blocking plate opens, the doors form a passage for bills with one orientation, but not the other. Hence, the bottom bill in the stack is blocked or dispensed depending on its orientation. In one embodiment, each of two independently operated cam units block one set of doors in a first position. Actuating one cam unit opens one set of doors and positively blocks the other set. Whenever the storage unit is outside the dispensing system, a transportation plate positively prevents accidental dispensing of any bills.

3,710,977

CONTAINER FOR SHEETS OF LIGHT-SENSITIVE MATERIAL

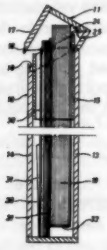
Gaston Alfons Van den Enden, Boechout, and Hugo Frans Ceulemans, Kontich, both of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

Filed July 28, 1970, Ser. No. 58,977

Claims priority, application Great Britain, July 29, 1969, 38,028/69

Int. Cl. B65h *3/00*

U.S. Cl. 221—102 **7 Claims**



A container for a stack of light-sensitive sheets, which comprises a box portion open at one end, a cover hingedly connected to said box portion, and a flexible ejecting strip which is anchored with one end to the box portion and with the other end to the cover, the intervening portion of the strip forming a sling in which the stack of sheets may be located so that upon opening the cover the sheets are pulled out of the box portion.

3,710,978

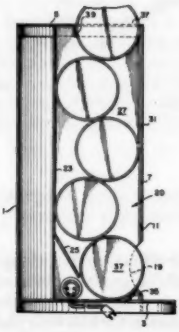
HEATED DISPENSING UNIT FOR CANS OF VISCOUS SUBSTANCES

Algar H. Cosby, P.O. Box 204A, Chantilly, Va.

Filed Jan. 20, 1971, Ser. No. 107,931

Int. Cl. A47f *1/08*

U.S. Cl. 221—150 A **5 Claims**



The invention is directed to a dispensing cabinet having an article chute from which cans or the like, containing a substance rendered more usable if warm, are stacked for gravity feed to a dispensing mouth and wherein one wall of the chute comprises a heat sink and is combined with one wall of the dispenser cabinet to form a chimney. The heating unit is a conventional light bulb located adjacent the dispensing mouth and beneath the heat sink whereby cans are progressively heated to a desired dispensing temperature during movement down the chute to the dispensing mouth; the light bulb also serving as an illumination source for transparent indicia incorporated in the dispenser walls.

3,710,979

METHOD AND APPARATUS FOR EMPTYING LARGE PACKAGES

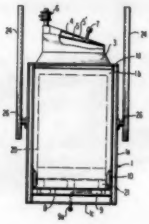
Hans Klebe; Ludwig Lange, both of Rheinfelden, and Gunther Mang, Schworstadt, all of Germany, assignors to Deutsche Gold-Und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, Germany

Filed July 27, 1971, Ser. No. 166,443

Claims priority, application Germany, April 19, 1971, G 71 14 807.7

Int. Cl. B67b *7/00*

U.S. Cl. 222—1 **22 Claims**



Method and apparatus for emptying large packages containing powdery material wherein the package with its lid removed to expose its contents is placed into a container on a platform of an elevator located in the container after which the elevator is raised to communicate the open top of the package with a funnel-type attachment resting on the top of the container for receiving the powdery material and discharging the same from an outlet in the attachment. Compressed air is introduced into the funnel attachment to fluidize the powdery material to facilitate discharge which occurs upon pivoting the container about a horizontal axis to initiate flow of the powdery material from the container into the funnel-type attachment and then outwardly thereof with the aid of the compressed air.

3,710,980

ROTARY VOLUMETRIC DISPENSING APPARATUS

Nelson R. Henry, Decatur, Ga., assignor to The Woodman Company, Inc., Decatur, Ga.

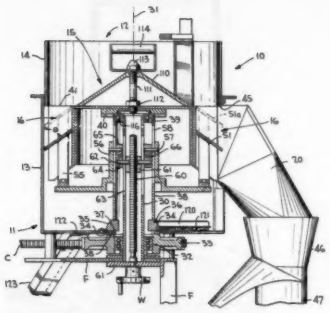
Filed Feb. 17, 1971, Ser. No. 116,091

Int. Cl. G01f *11/00*

U.S. Cl. 222—64 **29 Claims**

A volumetric dispensing apparatus is disclosed wherein a dispensing head having a plurality of fill cavities formed around the periphery is mounted within an annular cavity housing concentric with the head and forming the outer peripheral side of the cavities. An inclined bottom is provided for each cavity and a lateral discharge opening in the housing allows sequential release of the measured batches from the fill cavities. Draft is provided along the side surfaces to provide an enlarged top fill opening and an enlarged lateral discharge side to prevent bridging of product and to promote clean release of the batch. The dispensing head is mounted on a column and is adapted for easy removal for cleaning. An annular collar supports the cavity bottoms for simultaneous adjustment by a central jackscrew device. A rotary wiper removes the loose

material from the bottom of the cavity housing and deposits the same through a receiving opening. A product limiting fence extends across a bowl-type hopper mounted on the top of the dispensing head; said fence dividing the hopper into fill and discharge sections. Conveyor means is provided to feed product into the hopper at a fill point whereat the empty fill cavity emerges under the fence. A centrally located cone urges the product radially outward and handle means at the apex of the cone facilitates the dispensing head removal for



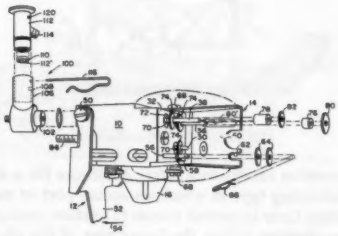
cleaning. A control arrangement is provided for the feed conveyor whereby the speed of the conveyor is increased upon detecting a thinning out of product and decreased to a normal level upon detecting a proper level of product in the hopper. The detecting finger is mounted substantially at the midpoint between the fill point of the fill section and the wiping point to sense the approximate middle of the spiral wedge of product formed by rotation of the dispensing head.

3,710,981

THREE PORT VALVE ASSEMBLY HAVING SELECTIVELY ACTUATED VALVES

William A. Arzberger, Medfield, and Edward J. LaLumiere, Woburn, both of Mass., assignors to Jet Spray Cooler, Inc., Waltham, Mass.

Filed Aug. 31, 1970, Ser. No. 68,435
Int. Cl. B67d *5/56*
U.S. Cl. 222—129.1 **9 Claims**



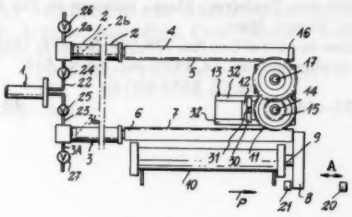
A three port valve assembly for dispensing either non-carbonated water, carbonated water, a non-carbonated beverage, a mildly carbonated flavored beverage. An actuating plate controls separate valves in each port (syrup, non-carbonated water and carbonated water) and the connections between the valves in the water ports and the plate can separately readily be disabled to open one valve without the other.

3,710,982

PLURAL SOURCE DISPENSER WITH INTERCONNECTED DISCHARGE VOLUME VARYING MEANS

Antonio Ferrari, Via Giovanni da Procida 4, Milan, Italy

Filed Sept. 7, 1971, Ser. No. 178,293
Int. Cl. B67d *5/60*
U.S. Cl. 222—134 **4 Claims**



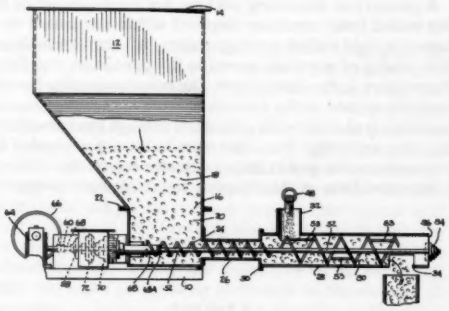
A liquid metering device comprises a driving cylinder operating the stem of a piston slidable in a first metering cylinder. The stem has a rack which is connected through a train of wheel-works to a further rack on a stem of a piston slidable in a second metering cylinder.

3,710,983

PLURAL AUGER MATERIAL HANDLING BLENDING SYSTEM

Ronald J. Ricciardi, 193 MacArthur Avenue, Garfield, N.J.

Filed Aug. 20, 1971, Ser. No. 173,457
Int. Cl. B67d *5/52*
U.S. Cl. 222—141 **6 Claims**



A material handling system characterized by a bin for receiving particulate solid material, a chamber connected to said bin for receiving said material, a first auger mounted in said chamber and extending into a transfer conduit connected to said chamber. The first auger has an open helical coil type blade for metering and propelling the material. A blending conduit connected to the transfer conduit for receiving material therefrom and being provided with a second inlet for receiving additional material to be processed, and a lower dispensing outlet. A second auger is mounted in the blending conduit which has an open helical coil type blade and a centrally disposed rod which passes through the center of the first auger and by means of a direct coupled extension through the end wall of the chamber. Means are provided for rotating the

rod. A cylindrical drive shaft is threadedly connected to the first auger which passes through the end wall of the chamber and second means are provided for rotating the cylindrical drive shaft independently.

3,710,984

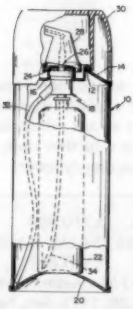
DISPENSING PACKAGE OF THE PRESSURIZED TYPE

Milo E. Webster, Braintree, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 778,480, Nov. 25, 1968. This application Dec. 14, 1970, Ser. No. 97,510

Int. Cl. B65d *83/14*

U.S. Cl. 222—145 **13 Claims**



A pressurized dispensing package has a self-supporting flexible walled inner container disposed within and seated on the base of a rigid walled outer container. A valve assembly controls mixing of materials stored in the containers and flow of that mixture to the atmosphere. Dip tubes secured to the valve assembly extend to the bottom of each container. The outer container is charged with propellant through the valve stem of the valve assembly. The valve stem has two ports sealed by a common annular gasket and an actuator cap on the valve stem is depressed to open the two ports and discharge a mixture.

3,710,985

DISPENSER FOR PROVIDING WARM LATHER FOR SHAVING

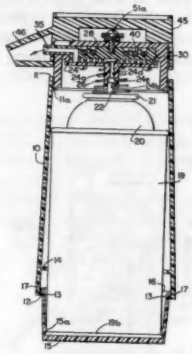
Frank M. Baum, Highland Park, Ill., assignor to The First National Bank of Chicago, Chicago, Ill.

Filed Nov. 9, 1970, Ser. No. 87,932

Int. Cl. B67d *5/62*

U.S. Cl. 222—146 HA **4 Claims**

A dispenser for providing hot lather from a pressurized container includes a housing with a telescoping base so that downward force on the dispenser will release lather from the pressurized container. A heat exchanger block of metal is electrically heated on one side of the heat exchanger block and on the other side thereof there is provided a spiral path for conducting the flow of lather released from the container. The entire construction provides for retention of the pressurized container within the housing and positive limits for the telescopic travel of the base into the housing proper. An electric heating element controlled by a thermostatic switch permits keeping the dispenser warm at all times, ready for instant use.



Any fluid or semifluid material apart from lather may be handled.

3,710,986

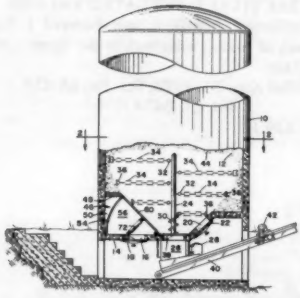
SAFETY ENCLOSURE FOR SILOS

James W. Lepley, R. D. No. 1, Smithville, Ohio

Filed Feb. 23, 1971, Ser. No. 117,955

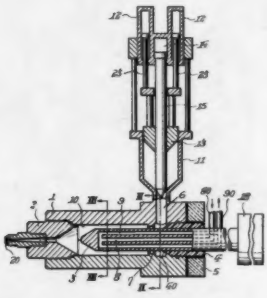
Int. Cl. B67d *5/06*

U.S. Cl. 222—185 **11 Claims**



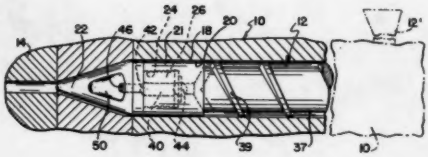
This invention relates to a safety enclosure for a silo of the bottom-unloading type in which an access port or manhole is in the bottom floor to permit access to certain parts of the unloading mechanism within the lower part of the silo so as to protect a mechanic against danger resulting from accidental collapsing of silage above the mechanism which could otherwise inundate the mechanic. The enclosure is of the type which has certain parts movable, preferably by power means, between a retracted inoperative position and an extended operative position to dispose an access door substantially vertically when the parts are in the extended operative position so that it may be opened adjacent the unloading mechanism for ready access thereto.

3,710,987
INJECTION MOLDING MACHINE FOR THERMO-SETTING PLASTICS
Michio Bessho, Himeji-shi, Hyogo-ken, Japan, assignor to Kawasaki Yuko Kabushiki Kaisha, Hyogo-ken, Japan
Filed April 15, 1971, Ser. No. 134,377
Claims priority, application Japan, April 18, 1970, 45/33117; April 18, 1970, 45/33118; June 18, 1970, 45/60904; July 17, 1970, 45/72004
Int. Cl. B29f *1/02*
U.S. Cl. 222—386 **1 Claim**



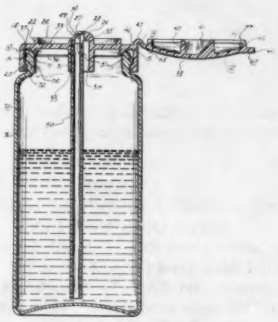
In the injection molding of thermosetting plastic the tendency of the plastic to harden in the injection cylinder can be successfully reduced, according to the invention, by minimizing the frictional engagement of the plunger with the bearing member therefore and incorporating appropriate fluid passage means in the plunger and the bearing member so as to prevent any overheating of the thermosetting plastic in the injection cylinder. Annular weir means formed on the cylinder wall serves to cause fluidal motion of the plastic uniform throughout the entire cylinder space, preventing any undesirable temperature gradient therein.

3,710,988
INJECTION MOLDING MACHINE
Ernest P. Moslo, 12700 Lake Avenue, Lakewood, Ohio
Filed Sept. 21, 1970, Ser. No. 73,910
Int. Cl. G01f *11/00*
U.S. Cl. 222—404 **13 Claims**



An injection molding machine comprising a feed screw which is rotatable and reciprocal in a plasticizing housing of a machine wherein the feed screw includes a head having a piston portion and a tapered nose portion projecting forwardly from the piston portion with the head including a generally central chamber therein communicated by means of passageways with the forward and rearward ends of said piston portion, and with there being centrally arranged movable ball valve means disposed in guided relation in said central chamber adapted for coaction with a valve seat for preventing return flow of plastic from the forward end of said piston portion to the rearward end thereof through said passageway means during the forward dispensing stroke of the feed screw.

3,710,989
SPRAY DISPENSING CAP AND HINGED CLOSURE
Donald F. Armour, Bloomfield, Conn., assignor to Monsanto Company, St. Louis, Mo.
Filed Nov. 6, 1969, Ser. No. 874,595
Int. Cl. B67d *47/14*
U.S. Cl. 222—562 **2 Claims**

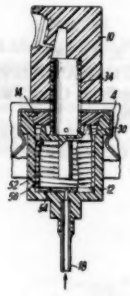


A one piece plastic dispensing and closure device, including a base cap for mounting over the mouth of a resilient walled container, and a sealing overcap hinged to the base cap. The base cap has an angular spray opening and houses a delivery tube. The overcap has a portion adapted to seal the periphery of the spray opening and a tab extension to facilitate its movement to an open or closed position. Both the tab and flexible hinge lie within the perimeter of the base cap when the overcap is in the closed position so as to prevent interference with capping equipment. The base cap also has a flexible seal ring to prevent leakage despite variations in the container and/or cap dimensions. A stop member is provided on the interior of the base cap and a cooperating protrusion on the exterior of the container to assist in orienting the direction of the spray with respect to the container.

3,710,990
AEROSOL TYPE DISPENSER
Stokes S. Lazarus, 4340 Crestview Road, Harrisburg, Pa.
Continuation-in-part of Ser. No. 763,189, Sept. 27, 1968. This application June 1, 1970, Ser. No. 42,090
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.24 **5 Claims**

An aerosol dispenser for dispensing fluids under pressure in which the dispenser has a spiral restricted passage between the dip tube and valve and through which the fluid to be dispensed passes when the valve is opened, the number of spirals in the

restricted passage being not less than one and not more than 100, preferably between six and 50, and the diameter of such



restricted passage being such that the fluid is retained therein, except when being dispensed, by capillary action.

3,710,991

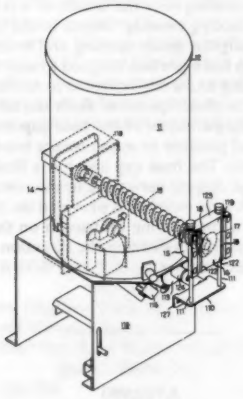
FLUENT MATERIAL DISPENSER WITH SCREW DISCHARGE ASSISTANT

William H. Callahan, and Royal F. Smith, both of Aurora, Ill., assignors to Liktro-Vend Corp., Aurora, Ill.

Continuation-in-part of Ser. No. 866,663, Oct. 15, 1969, abandoned. This application July 23, 1971, Ser. No. 165,543

Int. Cl. G01f *11/20*

U.S. Cl. 222—413 **10 Claims**



A fluent solid material dispensing mechanism including a motor driven auger operable upon a timed cycle to provide positive discharge of a metered quantity of base product from a discharge orifice and a seal assembly associated with the discharge orifice to prevent ingress of airborne moisture and movable in synchronization with the auger to allow discharge of the fluent material.

3,710,992

ROTARY SLIDE CLOSURE FOR LIQUID MELT CONTAINER

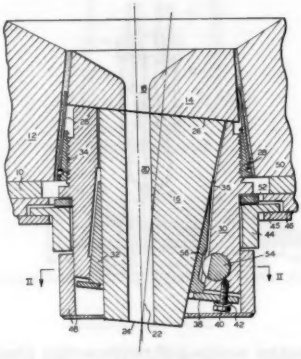
Rolf Hoffmann, Reinhausen, Germany, assignor to Didier-Werke AG, Wiesbaden, Germany

Filed Aug. 4, 1971, Ser. No. 168,899

Claims priority, application Germany, Sept. 3, 1970, P 20 43 588.5

Int. Cl. B22d *37/00*

U.S. Cl. 222—554 **8 Claims**



A rotary slide closure for a liquid melt container has a fixed plate with a through-flow channel at the outlet of the container. A rotary slide plate is mounted in contact with and adjacent the fixed stationary plate also having a through-flow channel. The through-flow channels may be brought into mutual connection or disconnection for throttling the melt. The rotary slide plate has a discharge opening for its through-flow channel that is coaxial in relation to the axis of rotation of the rotary slide plate and the axis of rotation of the slide plate forms an acute angle with the vertical central axes of the through-flow channels.

3,710,993

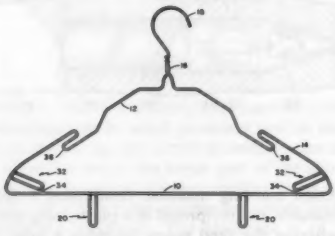
CLOTHES HANGER AND CLAMPS THEREFOR

Herbert S. Collin, c/o Collin Box & Supply Co., Newton, Mass.

Filed Nov. 5, 1970, Ser. No. 87,265

Int. Cl. A47j *51/15*

U.S. Cl. 223—91 **1 Claim**



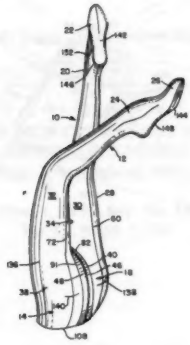
A clothes hanger is formed from a single length of wire stock and is bent into various configurations to define clips adapted to receive and retain skirts, pants, and the like. The

clips are formed integrally with and as a continuous part of the single length of hanger wire. The hanger is of relatively thin profile so that a large number of such hangers may be hung from a rack. The hanger is suited for use particularly by those who frequently must hang lager numbers of garments such as garment manufacturers.

3,710,994
INFLATABLE MANNEQUIN STRUCTURE ENHANCING REALISTIC BODY SIMULATION

Nancy Rey Cherry, and Judith Ann Schackelford, both of New York, N.Y., assignors to Inflat-A-Industries, Inc., New York, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,713
Int. Cl. A41h *5/02*
U.S. Cl. 223—67 **14 Claims**



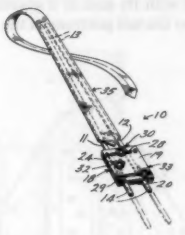
An inflatable mannequin of plastic sheet material shaped to simulate the human body below the waist is adaptable for use primarily in connection with commercial display of womens' panty hose. The sheet material is formed to define a hip section having a buttocks side and an abdomen side, with gusset means formed interiorly of the mannequin at the hip section extending between the buttocks side and the abdomen side to enhance the realism with which the mannequin simulates a human form. By a further aspect of the invention, gusset means are provided at foot and ankle portions located at the lower extremities of a pair of leg sections which extend from the hip section of the mannequin. The gusset means similarly operate to enhance the realism of the foot and angle portions of the mannequin.

3,710,995
NECKTIE STRETCHER

Herbert Zaun, 433 Victoria Place, Toledo, Ohio

Filed April 8, 1971, Ser. No. 132,380
Int. Cl. D06c *15/00*
U.S. Cl. 223—82 **7 Claims**

The invention is a tie stretcher having two generally parallel arms, the upper ends of which are inserted in a tie. A body member, having opposed spaced plates and side members, receives the lower portion of the arms. Upper and lower slots

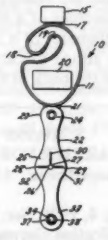


are defined by the body member. The upper slot mounts a fulcrum pin while the lower slot mounts a holding pin.

3,710,996
DISPLAY BELT HANGER

George Smilow, Yonkers, and Samuel L. Kayen, Elmont, both of N.Y., assignors to Berger & Gorin, Inc., New York, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,168
Int. Cl. A47j *51/097*
U.S. Cl. 223—87 **2 Claims**



An improved belt display hanger for supporting an apparel belt from the buckle end thereof in depending condition, capable of bearing price indicia thereon, which hanger cannot be removed from a supported belt without permanently destroying belt buckle engaging means, in such manner as to be readily detectable by sales personnel.

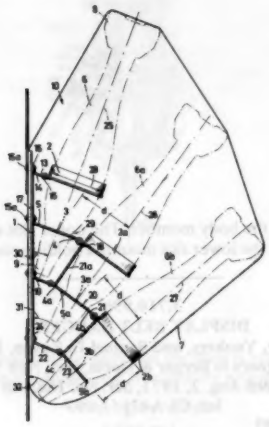
3,710,997
PROJECTILE STORING AND TRANSPORTING STRUCTURE

Niilo Kalervo Asikainen, Tampere, Finland, assignor to Oy Tampella Ab, Tampere, Finland

Filed Jan. 22, 1971, Ser. No. 108,699
Claims priority, application Germany, Jan. 31, 1970, P 20 04 489.7
Int. Cl. A45f *3/00*
U.S. Cl. 224—25 A **7 Claims**

Projectiles are supported in parallel rows with the projectiles facing downwardly and having their tail portions spread apart. Each projectile is supported by a ring which extends around its largest diameter and an opening in a plate below the ring, the opening having its axis aligned with the axis of the ring. Each ring and opening pair supports a projectile with its

axis at an oblique angle to the surface of a support plate to which the rings and plates in which the openings are formed, are secured. The arrangement is such that the topmost projectile of a vertical row is supported with its axis at a relatively small angle to the surface of the support plate, the next projectile is supported with its axis at a greater angle than the first projectile, etc., so the tail portions of the projectiles are spread



apart in fan fashion and are readily accessible. The rings to support successive projectiles of a row are spaced apart by a distance equal to the diameter of a ring. The support plate is provided with suitable straps to carry the storing and transporting arrangement on the back of a man like a knapsack.

3,710,998

LOCKABLE SKI CARRIER FOR MOTOR VEHICLES

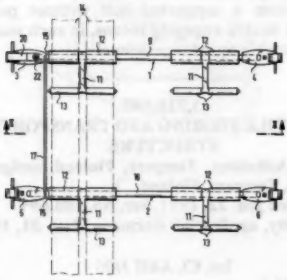
Hannes Marker, Hauptstrasse 51-53, Garmisch-Partenkirchen, Germany

Filed Aug. 4, 1970, Ser. No. 60,848

Claims priority, application Germany, Aug. 11, 1969, P 19 40 861.8

Int. Cl. B60r 9/12

U.S. Cl. 224—42.1 F **12 Claims**



Two U-shaped carrying members are supported, e.g., with their legs, in the gutters of the roof of the car and serve to hold at least two pairs of skis. Each U-shaped carrying member comprises for each pair of ski at least one locking element. These locking elements can be jointly moved and jointly locked in an operative position. An actuating member for actuating the locking elements of one U-shaped carrying member is positively connected by at least one coupling member to an actuating member for the locking elements of the other U-shaped carrying member. A common handle and a common locking device adapted to be locked up by a lock are provided for both actuating members.

3,710,999

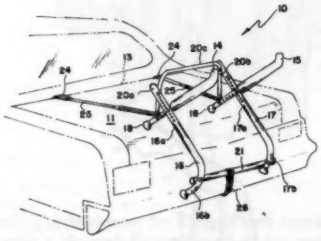
AUTOMOBILE CARRIER

Richard A. Allen, Bowles Terrace, Lincoln, Mass.

Filed Nov. 5, 1970, Ser. No. 87,084

Int. Cl. B60r 19/02

U.S. Cl. 224—42.03 B **10 Claims**



A carrier for carrying many different types of objects on an automobile, truly universal by reason of its ready and simple adaptability for removable attachment to the rear portion of substantially any automobile whether it be a domestic or foreign station wagon, sedan, square back, compact, or the like, comprising two generally L-shaped side members, an outwardly extending carrying member adapted for attachment to each side member, and a generally U-shaped cross piece adapted for attachment to the side members and the carrying members, and a second cross piece adapted for attachment to the side members remote from the U-shaped member.

3,711,000

SURFACE APPARATUS FOR HANDLING AN ELASTIC COLUMN

Remi Reynard, Montesson; Roger Tindy, Bougival, and Edmond Daniel, Saulx-Les-Chartreux, all of France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Paris, France

Continuation-in-part of Ser. No. 854,983, Sept. 3, 1969. This application Sept. 9, 1971, Ser. No. 178,924

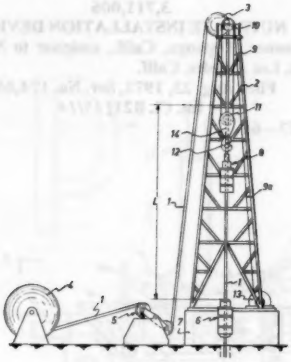
Claims priority, application France, Sept. 4, 1968, 68165109

Int. Cl. B65h 17/36

U.S. Cl. 226—8 **11 Claims**

This apparatus is provided with at least two devices for gripping an elastic column, including a lower and an upper gripping device, one at least of these devices being displaceable along the axis of the column in a released position.

In this apparatus each of said devices is constituted by a plurality of separate gripping elements arranged in series, these



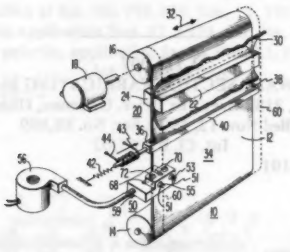
gripping elements being interconnected through elastic means.

3,711,001

WEB POSITION DETECTOR USING TEMPERATURE SENSING ELEMENTS

James Conrad Schopp, Framingham, Mass., assignor to RCA Corporation

Filed Nov. 8, 1971, Ser. No. 196,612
Int. Cl. B65h *25/26*
U.S. Cl. 226—19 **12 Claims**



Two temperature sensing elements, each having a parameter which varies with the temperature of the element, are cooled by a blower. When a movable web blocks the flow of air to one of the temperature sensing elements causing its temperature to rise, the resulting change in its temperature sensitive parameter relative to that of the other temperature sensing element, controls the movement of the web away from the blocking position.

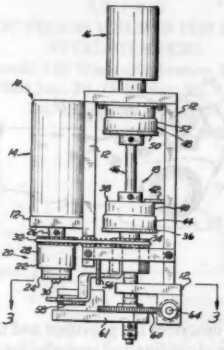
3,711,002

VARIABLE PRECISION FILM DRIVE

Andrew L. Amort, Ann Arbor, Mich., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 18, 1971, Ser. No. 189,989
Int. Cl. B65h *17/22*
U.S. Cl. 226—32 **18 Claims**

Apparatus for advancing imperforate film in a camera in increments so that the exposures on the film will be accurately located for subsequent use in the production of microfiche. Operation of a film drive mechanism is electrically controlled



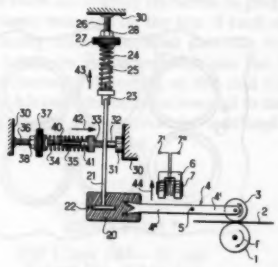
to provide a series of exposures that are accurately spaced on the film. An electronic programmer facilitates generation of various filming formats.

3,711,003

CAPSTAN DRIVE ARRANGEMNET FOR HIGH-SPEED INTERMITTENT TAPE DRIVE

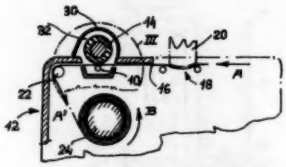
Marcel-Louis Boyer, Chatillon, and Michel Landwerlin, Le Pecq, both of France, assignors to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France

Filed Sept. 27, 1971, Ser. No. 183,752
Int. Cl. B65h *17/22*
U.S. Cl. 226—177 **20 Claims**



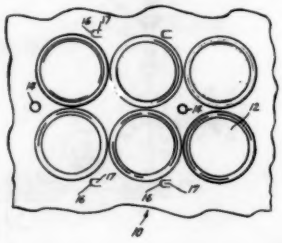
Capstan drive arrangement for high speed intermittent tape drive, including a motor driven capstan, an idler roller carried on a lever arm, and an electromagnet selectively operable to pivot the level about its axis to urge the idler roller towards the capstan to produce a tape driving pinch. The level arm is arranged so that when the electromagnet is not operated, the idler roller contacts the tape with substantially negligible pressure. The drive arrangement also includes a damping system having an elastically deformable connection between the lever arm and a rod having a side surface held in contact with a fixed abutment by a pusher.

3,711,004
TAPE MISFEEDING PROTECTED RECORDER/REPRODUCER
Alessandro Beretta, 16 Piazza Insubria, Milano, Italy
Filed April 7, 1971, Ser. No. 131,922
Claims priority, application Italy, April 9, 1970, 23113 A/70
Int. Cl. B65h *17/22*
U.S. Cl. 226—181 **10 Claims**



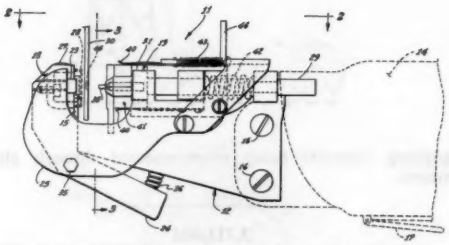
The disclosure describes the provision and the arrangement, in a magnetic tape recording and reproducing apparatus of the kind in which the tape and the supply and take-up reels are wholly contained into a removable and replaceable magazine or cassette, wherein a pressure roller is partially projecting for assisting the drive of the tape, of a shielding guard encircling said roller, outside the magazine, positioned and shaped to prevent the tape, if not properly winding about the take-up roller, to uncontrolledly expand and jam itself into the environmental space in the apparatus.

3,711,005
TRANSPORTING AND TRIMMER APPARATUS FOR PLASTIC FILM HAVING THERMOFORMED ARTICLES THEREIN
Peter C. Neil, Fullerton, Calif., assignor to Standard Oil Company, Chicago, Ill.
Filed April 12, 1971, Ser. No. 133,125
Int. Cl. G03b *1/18*
U.S. Cl. 226—52 **5 Claims**



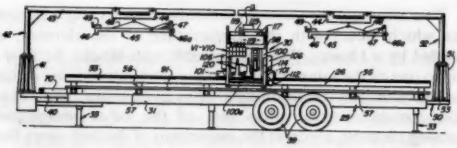
Disclosed is an apparatus for transporting a thin film of plastic having integral therewith a thermoformed article of manufacture and protrusions which facilitate guiding and advancing the film through the apparatus. The apparatus includes first and second guides spaced apart to provide a pathway. At least some of the guides include grooves which receive the protrusions. The guides also include slots which expose some of the protrusions, permitting a moving indexing finger to extend through the slots and engage the exposed protrusions. A trimmer is provided which includes a punch and die, and a film locator which engages at least one of the protrusions and brings the article of manufacture into proper alignment in the punch and die. The block carrying the punch is spring-loaded and biased to counter gravity. This provides a free-floating assembly which facilitates alignment of the punch and die.

3,711,006
NUTPLATE INSTALLATION DEVICE
Jack S. Conner, Topanga, Calif., assignor to Northrop Corporation, Los Angeles, Calif.
Filed Aug. 23, 1971, Ser. No. 174,056
Int. Cl. B21j *15/14*
U.S. Cl. 227—61 **6 Claims**



A rivet squeeze head, adapted to be used with a conventional rivet squeeze gun body, automatically providing the proper location and relationship for both attach rivets, a nutplate and suitable structure, to which the nutplate is to be attached, and squeezing both of the attach rivets simultaneously.

3,711,007
BUILDING WALL SECTION FABRICATING MACHINE
Arnold H. Fry, 3182 Grey Fox Drive, Gahanna, Ohio
Filed Nov. 12, 1970, Ser. No. 88,889
Int. Cl. B27f *7/02*
U.S. Cl. 227—101 **15 Claims**



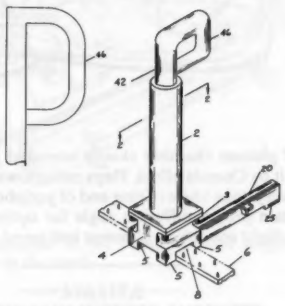
A machine for fabricating a section of the wall of a building, especially of the wood frame type, which receives and retains the studs and plates in proper relationship and nails them together while in such relationship to form the frame for the wall section. The machine is also designed to receive and retain sheets of sheathing on the frame in proper relationship to the frame and, while in such relationship, to attach the sheets properly to the frame.

3,711,008

IMPACT TOOLS

Paul R. Clifford, 23 Forty Acres Drive, Wayland, Mass., and Harry M. Haytayan, Sunnside Lane, Lincoln, Mass.

Filed Aug. 31, 1970, Ser. No. 68,423
Int. Cl. B25c 7/00
U.S. Cl. 227—147 2 Claims



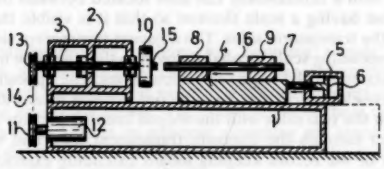
Manual and pneumatically operated impact tools for driving fasteners into concrete through the utilization of the kinetic energy of a hammer impacting a driver. The tools are adapted to insure the perpendicularity of the fasteners and to drive the fasteners in close proximity to a wall or vertical surface.

3,711,009

APPARATUS FOR OPTIONALLY SELECTING THE THRUST FORCE IN FRICTION WELDING

Takashi Kuzuya; Toshihiko Hayashi, both of Kariya, and Shigeo Fukaya, Nishikamo, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya-shi, Japan

Continuation of Ser. No. 798,428, Feb. 11, 1969, abandoned.
This application Nov. 17, 1971, Ser. No. 199,440
Claims priority, application Japan, Feb. 13, 1968, 43/8962
Int. Cl. B23k 27/00
U.S. Cl. 228—2 6 Claims



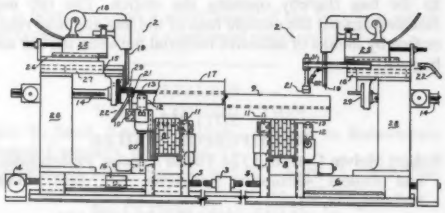
An improved apparatus for optionally selecting one of a plurality of thrust forces required for generating heat by the frictional contact between two workpieces for performing the upset operation during a friction welding operation. Two series of thrust force generating systems are combined in a hydraulic circuit which is connected to three hydraulic cylinders of the friction welder. One of the hydraulic cylinders is secured to a bed of the friction welder at an outside position of a slide table while the other two hydraulic cylinders are disposed at the counter side positions with respect to the slide table. In a typical embodiment, one of the thrust force generating systems is preferably applied for generating the thrust force which is required for operating the upset operation while the other one is applied for generating the thrust force which is required for generating heat. The above-mentioned combination of the thrust forces is optionally selected by operating means for selecting the system which comprises a plurality of solenoid selector valves, pressure reducing valves and their associated connections.

3,711,010

AUTOMATIC FUSION WELDER FOR STRUCTURAL STEEL MEMBERS

John R. McConnell, 148 Woodside Avenue, Ridgewood, N.J.

Filed Jan. 20, 1970, Ser. No. 4,359
Int. Cl. B23k 1/00, 37/04
U.S. Cl. 228—4 2 Claims



The apparatus shown, generally using special end connection details, completely fabricates a floor beam by the fusion welding of said details at the ends of the raw shape in a single continuing automatic handling of the work material without manual labor.

This apparatus uses opposite-hand dual fusion welders prelocated on a common track to suit the overall length of the floor beam being fabricated. Dual transverse belt conveyors integrally mounted on the inner toes of the said welders receive successive raw shapes from protective cushioning intermediate lowering devices that receive said shapes from an overhead travelling crane. Co-ordinated forward actuation of the conveyors brings the shape to stop tabs to locate it under the operating centers of the end-located dual welders. Elevated above the belt by dual vertically projectible rollers, longitudinal equally projectible angle-carrying rams length center the shape for equal overhang of the end connection details. After the rams are slightly retracted to proper length, the welding carriages mounted on the top of each of the dual welders, magnetically tracing inserted patterns, fusion-weld the connection details to the shape and into the flanges to complete the mechanical fabricating of the said floor beam. With stop tabs withdrawn, the beam is lowered to the belts for forwarding to discharge for removal by overhead crane or other means out of the general area.

ERRATUM

For Class 228—56 see:
Patent No. 3,711,019

3,711,011

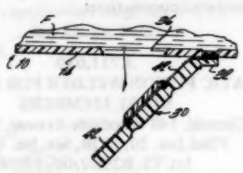
RESEALABLE PACKAGING DEVICE

Robert J. Kugler, East Meadow, N.Y., assignor to Action Packaging Corporation, Brooklyn, N.Y.

Filed May 4, 1970, Ser. No. 34,021
Int. Cl. B65d 37/00, 17/06
U.S. Cl. 229—7 R 9 Claims

A fluid-containing bag made of flexible heat sealable plastic material in which the internal cavity of bag is completely sealed and an openable and resealable spout. The spout may

be opened by pulling up on a sealing tab which is permanently attached to the bag adjacent a pouring location and which is fixed to the wall material of the bag at the point where the pouring orifice is to be formed. The initial pulling of the tab



tears open the bag at the point at which the orifice area is fixed to the bag thereby opening the orifice. The tab may be resealed against the outside face of the bag and may reseal the orifice by means of adhesive material between the tab and the bag wall.

3,711,012

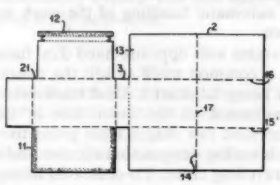
MULTIPURPOSE MAILER

Robert Melvin Cytron, 1724 Tustin Avenue, Philadelphia, Pa., and Robert Alexander Freishelm, Sr., 8627 Ferndale, Philadelphia, Pa.

Filed July 16, 1971, Ser. No. 163,172

Int. Cl. B65d *27/00*

U.S. Cl. 229—92.7 **4 Claims**



A letter sheet suitable for use as combined picture postcard, advertising form, reservation form, stationary and envelope. The letter sheet constitutes an envelope portion and a message portion separated by a narrow third portion. The envelope portion and the message portion are foldable into three segments along a pair of coextensive fold lines. The narrow third portion connects the said envelope portion and message portion in the area between said pair of coextensive fold lines and may be rectangular or trapazoidal. A flap is connected to the center segment of one of the envelope portions opposite the narrow third portion. Each of the outer of the segments of the envelope portion has an adhesive edge. The adhesive edge of one of said outer segments of the envelope is separated from said outer segment by a perforated tear strip. The outer segment has undercut edges making the outer third adaptable for being tucked under the opposite outer segment. The message portion is connected to said narrow third portion by a perforated line.

3,711,013

THRUST CONTROL AND SOUND APPARATUS

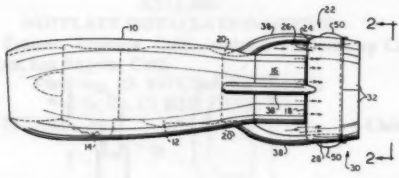
Remo Tontini; Victor Millman, and Howard R. MacDonald, all of San Diego, Calif., assignors to Rohr, Corporation, Chula Vista, Calif.

Continuation of Ser. No. 866,641, Oct. 15, 1969, abandoned. This application April 26, 1971, Ser. No. 137,630

Int. Cl. B63h *25/46;* **B64c** *15/10*

U.S. Cl. 239—265.17 **13 Claims**

Jet engine is provided with ejector ring aft of nozzle exit defining mixing zone for engine exhaust and free steam air. Ring is hollow to form plenum chamber open at rear to act as peripheral nozzle to eject peripheral jet stream surrounding mixed gases, adding to total thrust and further mixing gases. Plenum chamber is supplied with gases from engines through conduits which also support ring on engine. Peripheral series of flaps pivotally mounted at their leading edges to trailing



edge of plenum chamber closely surround jet stream and attach to it by Coanda effect. Flaps swing toward and away from axis to vary cone angle of ring and of peripheral jet stream and thus attain proper diffusion angle for optimum thrust under varying flight conditions of power and speed.

3,711,014

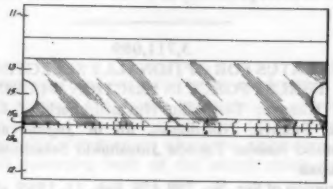
PERSONAL PORTFOLIO COMPUTER

Joseph A. Tucker, 6340 Reeds Drive, Mission, Kans.

Filed Aug. 16, 1971, Ser. No. 171,958

Int. Cl. G06c *3/00;* **G06g** *1/02*

U.S. Cl. 235—70 R **3 Claims**



A personal portfolio computer having a primary utility as a record keeping and stock value calculating device is generally constructed in the form of an envelope with rectangularly shaped substantially flat sides being interconnected along the opposite longer parallel edges. In the assembled form, the two flat sides with transparent portions therein, is a pocket size envelope with a substantially flat slide located between the two sides and having a scale thereon so that it is visible through one of the transparent sides. The adjacent transparent side has a corresponding scale located thereon so that the slide may be manipulated for slide rule type calculations. The opposite side of the envelope structure has a record keeping means located between the two sides with the record keeping portion visibly apparent through the opposite transparent side, and with a portion of the record keeping means extending exteriorly of the transparent sides so that current data computed by the slide rule type structure may be recorded thereon. That portion of the permanent data on said record keeping means between said sides is protected by the presence of the transparent side.

3,711,015

COUNTING DEVICES

Robert D. Young, Accord, N.Y., assignor to Canyon Research Corporation, Accord, N.Y.

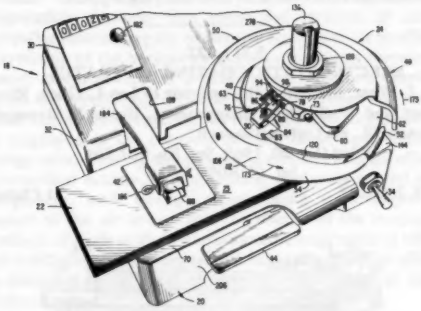
Filed Nov. 20, 1970, Ser. No. 91,361

Int. Cl. B61l *1/16;* **G06m** *7/00*

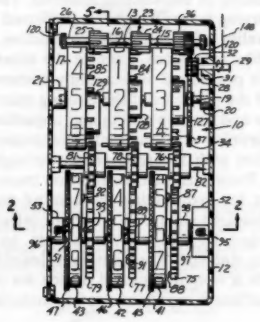
U.S. Cl. 235—98 R **23 Claims**

Devices for counting paper money, food stamps, and the like which include a cyclically operable counting head

designed to displace seriatim succeeding items in a stack of items to be counted and a register which is advanced during each cycle of operation of the counting head to provide a count of the items in the stack.



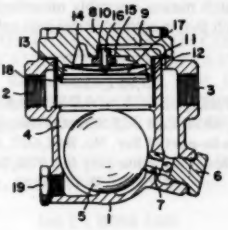
3,711,016
PREDETERMINING COUNTER
Boris Milvich, 507 East Broadway, Long Beach, Calif.
Filed Nov. 5, 1971, Ser. No. 196,044
Int. Cl. G06m *3/04*; **G06f** *15/18*
U.S. Cl. 235—132 E **18 Claims**



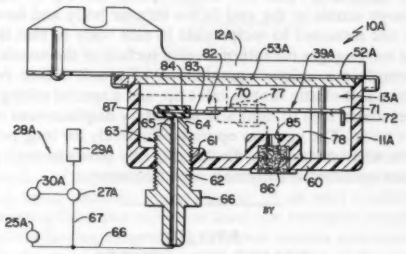
A predetermining counter has counting wheels, servo wheels, and presetting wheels. Series-connected contacts are located on the servo and presetting wheels for selectively actuating an electric device. The construction of these contacts is such that contacts on adjacent presetting and servo wheels are in electrically conducting engagement in only one relative position of the particular wheels.

3,711,017
AUTOMATIC VENT VALVE FOR A STEAM TRAP
Katsuji Fujiwara, 191 Nishitani, Hirasoka-cho, Kakogawa, Japan
Filed Feb. 8, 1971, Ser. No. 113,363
Claims priority, application Japan, Feb. 14, 1970, 45/12982
Int. Cl. F16t *1/08*
U.S. Cl. 236—59 **4 Claims**

A steam trap having an automatic vent valve which comprises a disc-shaped bimetal member provided with a valve body facing to engage a valve seat. The valve seat is attached on the condensed water sump side of an air vent passage which is bored through a cover block of the trap, and which connects said sump with a condensed water outlet part.

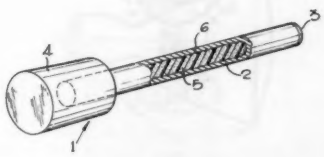


3,711,018
VALVE CONSTRUCTION
Douglas R. Scott, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.
Continuation-in-part of Ser. No. 815,977, April 14, 1969. This application Jan. 4, 1971, Ser. No. 103,704
Int. Cl. G05d *23/27, 23/275*
U.S. Cl. 236—87 **12 Claims**



A condition responsive pneumatic valve construction having a support means provided with a valve seat means. A plural leg ambient temperature compensating bimetal member has one of the legs thereof provided with a free end means that controls the valve seat means in response to radiant heat directed to such one bimetal leg through an aligned window means in a cover means carried by the support means, the remainder of said legs being secured to said support means at the free end means thereof.

3,711,019
WELDING AND BRAZING DEVICES
Rulo Ralph P., 10216 St. Arthur, St. Ann, Mo.
Filed Feb. 5, 1970, Ser. No. 8,889
Int. Cl. B23k *3/06, 35/14*
U.S. Cl. 228—56 **1 Claim**



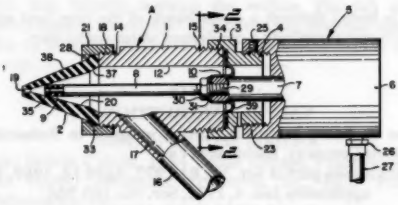
The present disclosure relates to devices for welding and is particularly useful for applications where it is desirable to carry a welding unit as an accessory to a motor vehicle for

temporary welding repairs comprising, a housing, said housing constructed from suitable welding metal and provided with a chamber therein and provided with an outlet port from said chamber, heat producing means operably mounted within said chamber and hatch means operably mounted on said housing and disposed such that it covers or exposes said outlet port.

3,711,020
HIGH FREQUENCY SOLDER PASTE GUN

Robert P. Zelna, 4658 East 355 Street, Willoughby, Ohio

Continuation-in-part of Ser. No. 848,607, Aug. 8, 1969, abandoned. This application July 6, 1970, Ser. No. 52,699
Int. Cl. B05b *17/00*
U.S. Cl. 239—1 **1 Claim**



An applicator gun for solder paste having a tapered discharge nozzle at the end of the tubular body and having a valve rod mounted to reciprocate in said body so that the tip of the rod engages the internal valve surface of the nozzle. The gun employs a unique combination of a soft elastic rubber nozzle, a soft elastic rubber valve tip, and a special rolling-type rubber diaphragm to minimize secondary displacement of the solder paste. The gun can operate effectively for long periods of time when continually discharging tiny beads of such paste or when operated at extremely high frequency.

3,711,021
HOLDER FOR ARTICLES

Sylvia Tantillo, 2 Jason Lane, Mamaroneck, N.Y.

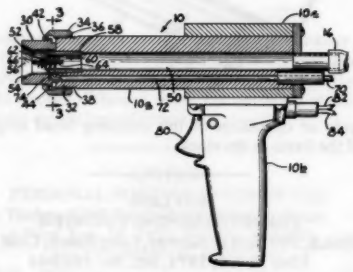
Continuation-in-part of Ser. No. 868,836, Oct. 23, 1969, abandoned, which is a continuation-in-part of Ser. No. 852,626, Aug. 25, 1969, abandoned. This application Sept. 21, 1970, Ser. No. 74,090
Int. Cl. A47g *33/08*
U.S. Cl. 248—330 **7 Claims**

A holder for articles has a compartmentalized bowl housing for storing the articles and a telescoping rod suspension assembly rotatably mounting the bowl. The holder assembly is adaptable to be selectively suspended from an overhead support or mounted on an underlying surface. The telescoping rod assembly is operative to raise and lower the bowl with respect to either the overhead or underlying support.

3,711,022
ELECTROSTATIC COATING APPARATUS

Bruce J. Witte, Elmhurst, Ill., assignor to Leo L. Glick, River Forest and Wallenstein, Spangenberg, Hattis & Strampel, Chicago, Ill., part interest to each

Filed Oct. 20, 1969, Ser. No. 867,501
Int. Cl. B05b *5/02*
U.S. Cl. 239—15 **21 Claims**

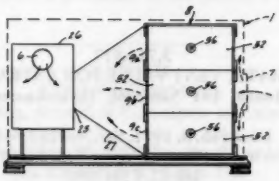


Apparatus for electrostatically applying a coating of a substantially dry, solid particulate coating material to an article comprising an electrostatic spray head which is in communication with a source of the coating material. The spray head has particle-charging means which in a preferred form thereof includes a plurality of electrically conductive, spirally arranged, bristle-like extensions. Each of the extensions has its longitudinal axis positioned substantially transversely to the path of travel of the particles of the coating material, and has at least one free end for contacting and imparting an electric charge to the particles. A container for the coating material is in communication with the spray head through a material-supply conduit. Pressurized-air distribution means is provided in the container for maintaining the coating material in the container in a fluidized state. A Venturi, or injection, tube arrangement carried by the container acts to entrain the fluidized coating material. The container desirably is used in conjunction with a weight actuated device for automatically maintaining a sufficient supply of coating material in the container.

3,711,023
DEVICE FOR CONTROLLING THE EVAPORATION OF VOLATILE SUBSTANCES PARTICULARLY FOR USE IN AIR CONDITIONING SYSTEMS

Dean E. Smith, 4649 North Dover Street, Chicago, Ill.

Filed March 26, 1971, Ser. No. 128,277
Int. Cl. A24f *25/00*
U.S. Cl. 239—54 **26 Claims**



A method of creating odors in which the individual components from which the odor is to be formed, in volatile form,

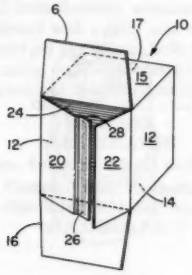
are stored in their own individual receptacles, controlled amounts of said components being released, by evaporation, from their individual storage receptacles, with the various evaporation products being subsequently intermixed to produce the desired odor by first intermixing individual evaporation products into respective streams of air and thereafter intermixing the respective streams of air to effect an intermixing of the various evaporation products therein contained, and a device for practicing such method employing means for producing a plurality of individual air streams, novel individual storage means for respective components to be employed in the creation of such odor, each individual storage means having means associated therewith for effecting a controlled release by evaporation of the associated stored component, such storage means being so arranged with respect to the air stream that the release of the evaporation products of each of the various stored components is effected into a different air stream, means being provided for effecting an intermixture of such air streams subsequent to the introduction therein of the various components.

3,711,024

METHOD AND CARTON FOR IMPARTING FRAGRANCE TO CARTON CONTENTS

Phillip G. Hammond, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 12, 1971, Ser. No. 142,493
Int. Cl. B65d *5/08*
U.S. Cl. 239—55 **4 Claims**



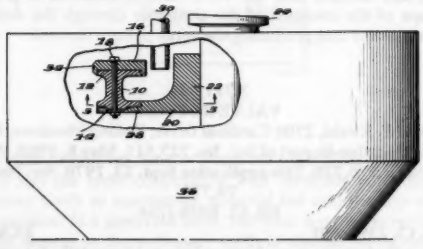
Improved carton and method for imparting fragrance to carton contents by providing a passage and chamber within the package frame itself and allowing the vapor pressure of the perfume to drive aromatic vapors throughout the carton interior.

3,711,025

CENTRIFUGAL ATOMIZING DEVICE

Ralph N. Miller, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 849,440, Aug. 12, 1969, abandoned. This application March 15, 1971, Ser. No. 124,497
Int. Cl. B05b *1/26*
U.S. Cl. 239—222.11 **2 Claims**



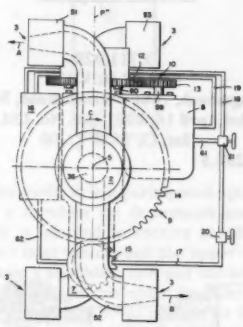
In a centrifugal atomizer comprising a rotatable disc, a plurality of pins mounted normally on the perimeter of the disc, and an upper annular plate mounted on the pins and parallel to the disc, erosion of the disc and annular plate is reduced by outwardly flaring the ends of the pins.

3,711,026

APPARATUS FOR THE CLEANING OF CONDUITS AND CONTAINERS AND METHOD OF OPERATING SAME

Willy Heinrich, Rheinkamp-Repelen, and Ludwig Strom, Rheinhausen, both of Germany, assignors to Woma-Apparatebau Wolfgang Maasberg & Co. GmbH, Rheinhausen, Germany

Filed Sept. 14, 1970, Ser. No. 71,959
Claims priority, application Germany, Sept. 13, 1969, P 19 46 500.0
Int. Cl. B05b *3/00*
U.S. Cl. 239—227 **8 Claims**



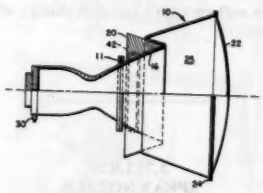
An apparatus for the cleaning of the internal surfaces of receptacles of substantially any configuration and type comprises a head rotatable about the axis of an inlet conduit for the cleaning fluid and carries at least one rotatable nozzle arrangement having tangentially oriented nozzles communicating via the head with the conduit for rotation of the nozzle member upon ejection of the cleaning fluid through the nozzles thereof. A hydraulic motor is coupled with the head for rotating the same about the conduit axis and relatively thereto, the motor being driven at an adjustable rate by fluid delivered by a hydraulic pump coupled with the nozzle box and driven thereby.

3,711,027

EXTENDIBLE NOZZLE FOR ROCKET ENGINES

Lee F. Carey, North Tonawand, N.Y., assignor to Textron Inc., Providence, R.I.

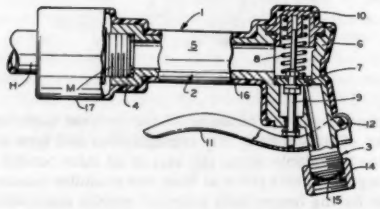
Filed March 17, 1971, Ser. No. 125,087
Int. Cl. B64c *15/00*
U.S. Cl. 239—265.19 **17 Claims**



An improved rocket engine nozzle extension of the type that is deployable from a compactly "stowed" condition to an extended length condition; such as following a rocket stage

separation so as to increase the engine thrust and therefore range-payload capabilities. The invention has particular relation to the problem of providing a reduced rocket engine length (when "stowed") in engines of the large expansion ratio nozzle type; for application in rocket vehicle upper stages, space-craft, envelope limited missiles, and the like. The disclosure features use of a frusto-cone-shaped member formed of thin and lightweight convoluted ductile sheet material, to comprise the engine nozzle wall structure which is adapted to be unrolled in crease-free manner. The device is arranged in combination with a temporary cover member which is so attached to the nozzle exit end portion thereof as to seal therein gas pressure sufficient to cause the nozzle structure to unroll into its extended configuration. The cover is then jettisoned so as to operatively open the nozzle.

3,711,028
SPRAY DEVICE
Robert W. Hengesbach, 7886 Munson Road, Mentor, Ohio
Filed April 16, 1971, Ser. No. 134,605
Int. Cl. B05b *11/00*
U.S. Cl. 239—288.5 **7 Claims**

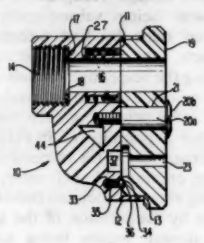


The spray device comprises an elongated metal body having at one end a discharge nozzle and at the other end an integral internally threaded inlet fitting adapted to be detachably coupled to a conventional external threaded outlet fitting such as provided on a garden hose. Intermediate its ends the body has a hand grip portion. The body is enclosed in sealed relation in an imperforate, heat insulating, flexible, vinyl plastisol jacket which extends from adjacent the nozzle to and beyond the inlet fitting. The portion of the jacket which extends beyond the inlet fitting is in the form of a shield of larger internal diameter than the inlet fitting and extends beyond the inlet fitting a distance such that when the hose fitting is screwed into the inlet fitting, the joint therebetween is within and fully surrounded by the shield so that hot water or dangerous chemicals being fed to the spray device and escaping at the joint is prevented from striking the operator.

The jacket is soft enough to absorb shocks when the device strikes hard objects.

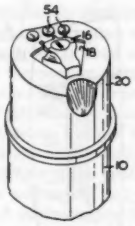
3,711,029
SPRAY NOZZLE
Lawrence D. Bartlett, Route 2, Hartford, Ky.
Filed April 13, 1971, Ser. No. 133,556
Int. Cl. A62c *31/02*
U.S. Cl. 239—394 **16 Claims**

A nozzle assembly including a rotary selector head provided with a plurality of integral nozzle tips which are selectively indexed into the fluid-flow line. The novel one-piece body design provides a shield to prevent water from being emitted



toward the operator and the unit includes a simple O-ring seal which is spring loaded and pressure biased to prevent leakage.

3,711,030
MULTI-PATTERN SPRAYING APPARATUS
Gerald D. Jones, Ontario, Canada, assignor to Imperial Oil Limited, Toronto, Ontario, Canada
Filed June 22, 1971, Ser. No. 155,456
Claims priority, application Canada, June 18, 1971, 86141
Int. Cl. A62c *31/02*
U.S. Cl. 239—397 **9 Claims**

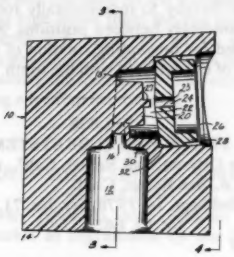


Apparatus for dispensing liquid in a plurality of spray patterns includes an aerosol container having an upwardly directed valve stem mounted on its top. An overcap is fitted over the top of the aerosol container and a spray head having a plurality of nozzle outlet apertures, each corresponding to a different predetermined spray pattern is mounted to said overcap for rotational indexing motion and for rectilinear valve actuation motion. THe spray head includes a plurality of inlet ports each communicating with an associated outlet aperture. The inlet ports lie in equally spaced relation to the pivotal axis of the spray head such that when the spray head is indexed to select a desired spray pattern, one of said inlet ports is brought into alignment with the valve stem of the aerosol container. When the spray head is depressed, the valve stem and the inlet port aligned therewith are brought into fluid communication with one another and the valve stem is actuated to permit escape of the contents of the container through the desired nozzle outlet thus producing the spray pattern desired.

3,711,031
VALVE BUTTON
Ronald F. Ewald, 2700 Cardinal Drive, Rolling Meadows, Ill.
Continuation-in-part of Ser. No. 727,511, May 8, 1968, Pat. No. 3,570,770. This application Sept. 23, 1970, Ser. No. 74,770
Int. Cl. B05b *1/34*
U.S. Cl. 239—601 **3 Claims**

A self-cleaning spray button designed especially for use on aerosol valves for spraying starch. The discharge passageway within the button comprises an inlet from the valve stem lead-

ing into an annular expansion chamber which connected with a swirl chamber just behind the discharge outlet. Additionally,



the orifice land of the terminal orifice tapers outwardly thereby restricting the diameter of the spray pattern.

3,711,032

FLOTATION OF LATERITIC NICKEL ORES

David Weston, 34 Parkwood Avenue, Toronto, Ontario, Canada

Filed Oct. 24, 1969, Ser. No. 869,375
Claims priority, application Canada, Dec. 13, 1968, 037788
Int. Cl. B02c *15/00*; B03d *1/02*
U.S. Cl. 241—20 **10 Claims**

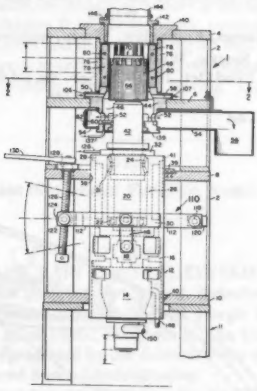
A process for the beneficiation of nickel bearing laterite ores by means of froth flotation wherein a dispersed pulp of the ore is conditioned with a fatty acid type collecting agent either at an elevated pH to produce, following flotation, an enriched flotation tailing or at a reduced pH to produce, following flotation, an enriched flotation concentrate.

3,711,033

GRANULATOR

Stanley T. Gotham, Somerset, Mass., assignor to Cumberland Engineering Company Inc., Pawtucket, R.I.

Filed March 18, 1971, Ser. No. 125,502
Int. Cl. B02c *18/12*
U.S. Cl. 241—47 **15 Claims**



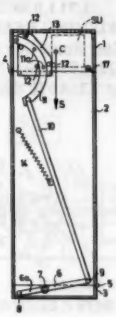
A granulating machine in which the rotor turns on a vertical axis and has teeth cooperating with vertically mounted stationary teeth to comminute material fed into the top of the granulator. In a preferred form, the rotor is movable vertically with respect to the stationary teeth to change the amount of cutting engagement of the rotor teeth with the stationary teeth. Suction means are provided for removing comminuted material at the base of the rotor.

3,711,034

SHREDDER FOR DOCUMENTS AND THE LIKE

Adolf Ehinger, Goethestrasse 10, D-7460 Balingen, Germany

Filed Oct. 26, 1970, Ser. No. 84,061
Claims priority, application Germany, Oct. 27, 1969, P 19 54 009.1
Int. Cl. B02c *19/00*
U.S. Cl. 241—100 **8 Claims**



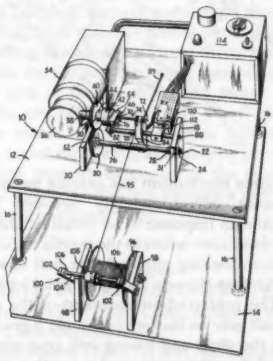
An upper cover portion is superimposed upon a lower housing portion of a shredder for documents and the like. The housing portion is adapted to receive shredded documents through an upper inlet therein and the upper cover portion is adapted to contain a shredding unit and has an outlet through which shredded materials can enter the inlet of the housing portion. Means mounts the cover portion on the housing portion in such a manner that is is pivotably displaceable relative thereto between an operative position in which the outlet registers with the inlet and an inoperative position in which the outlet is upwardly displaced relative to and out of registry with the inlet so as to expose the same. Further means may be provided to assist such displacement, in form of springs or the like, and also to counterbalance the weight of the portions during displacement.

3,711,035

FILAMENT WINDING APPARATUS

Howard J. Tatum, Harrington Park, N.J.; Nils A. Jernberg, Tappan, and John Braun, Westbury, both of N.Y., assignors to The Population Council, Inc., New York, N.Y.

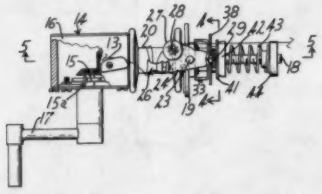
Filed Aug. 12, 1971, Ser. No. 171,096
Int. Cl. B21f *17/00*
U.S. Cl. 242—7.01 **11 Claims**



An apparatus for winding a filament on a straight shank of an intrauterine device includes a rotatably driven chuck to which one end of the IUD is clamped. The straight shank of

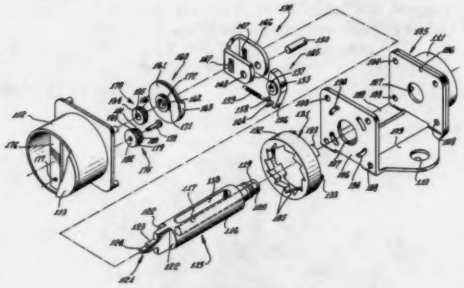
the IUD is snapped into a notch formed on one end of a bar slidably impaled on a guide spar. The other end of the bar has a threaded semi-cylindrical groove which engages a rotating threaded rod to cause axial translation of the bar relative to the shank. A slot, communicating with the notch in which the shank is held, is cut into the bar to guide the filament onto the shank in a uniform helix as the chuck and the rod are rotated.

3,711,036
FISHING REEL
Thomas C. Spraggins, Star Route Box 41P, Destin, Fla.
Filed Jan. 22, 1971, Ser. No. 108,714
Int. Cl. A01k *89/00*
U.S. Cl. 242—84.1 R **3 Claims**



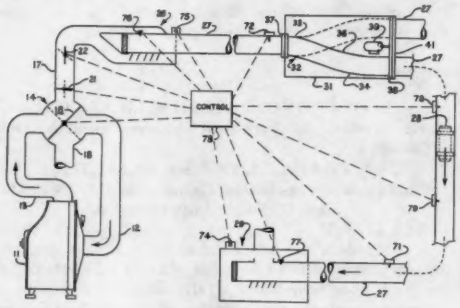
A fishing reel adapted to be used as a holder for slack line ahead of the main reel. The reel comprises a line pick up bail designed, upon a tug on the bait at the end of the line, automatically to snap to a free running position relative to the spool, permitting line thereon to pay out.

3,711,037
DEAD ZONE MECHANISM FOR AND INERTIA LOCKING RETRACTOR
Hans Jakob, Sherman Oaks, Calif., assignor to American Safety Equipment Corporation, Encino, Calif.
Filed April 5, 1971, Ser. No. 131,125
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 **12 Claims**



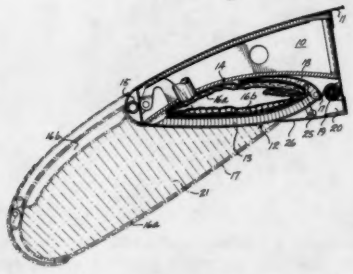
The dead zone mechanism has gearing means for moving a blocking means correspondingly between blocking and release positions in response to an initial extension of the belt to provide a dead zone wherein the inertia locking mechanism is blocked from locking although the belt is withdrawn at a rate of acceleration above a predetermined locking rate of acceleration. The preferred embodiment of the gearing means includes a shaft gear on the belt reel shaft, a gear set on an axle parallel with the shaft and having one gear meshing with the shaft gear and the other gear meshing with a disc gear on the blocking means, said shaft gear and the gear of the set which meshes therewith having different numbers of teeth whereby rotation of the shaft by extension of the belt rotates the blocking means correspondingly between positions. The alternative preferred embodiment of the gearing means has the disc gear mounted for rotation with the reel and has a stationary tooth associated with the frame for engaging the disc gear as it is rotated thereby to incrementally rotate the blocking means correspondingly between positions. A retainer means may be provided for preventing rotation of the disc gear except as a result of engagement with the tooth.

3,711,038
PNEUMATIC TUBE SYSTEM
Wilbur M. Van Otteren, San Rafael, Calif., assignor to Automatic Tube Co., San Rafael, Calif.
Filed Sept. 14, 1970, Ser. No. 71,793
Int. Cl. B65g *51/04*
U.S. Cl. 243—2 **5 Claims**



In a pneumatic tube transport system the direction of air pressure from a single blower is reversed to slow down a carrier at a terminal station. Controls automatically operate an air shifter to switch the blower connection from pressure to vacuum and then to a low positive pressure as the carrier approaches a terminal station and operates oppositely for reverse carrier travel. The invention is particularly adapted for large carrier systems and includes improved station structure for insuring carrier closure and locking.

3,711,039
PNEUMATIC LEADING EDGE FLAP FOR AN AIRCRAFT WING
Varnell L. James, Enumclaw, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Oct. 26, 1970, Ser. No. 84,000
Int. Cl. B64c *3/46*
U.S. Cl. 244—44 **6 Claims**



This invention comprises an expandable pneumatic leading edge flap for an aircraft wing that increases the C_L (coefficient of lift) thereof. A thin flexible titanium membrane extends from the stagnation point of the leading edge flap rearwardly

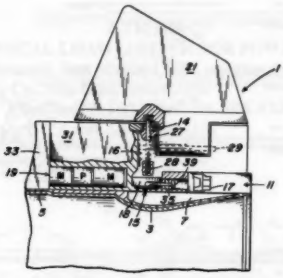
along the back surface of the flap to a roller assembly housed within the wing leading edge portion, and an inflatable bag housed within a suitable recess in the lower leading edge portion of the airfoil and enclosed by the leading edge flap when retracted. During high speed flight the bag is deflated and the membrane is stretched taunt so as to define a clean aerodynamic leading edge. When increased lift is desired, the bag is inflated causing the membrane to be unrolled to form an expanded leading edge flap for the wing.

3,711,040

OUTBOARD MISSILE CONTROL SURFACE AND ACTUATOR

August B. Carver, Wheaton, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed April 20, 1971, Ser. No. 135,737
Int. Cl. F42b *15/16, 15/02*
U.S. Cl. 244—3.21 **6 Claims**



The present invention comprises a control surface actuation system capable of disposition within a restricted volume. The present actuation system and control surface is disposed outboard of the missile due to space limitations imposed by an unusually large nozzle diameter. The system comprises four independent electro-hydraulic actuators of the push-push configuration for driving four aerodynamic control surfaces arranged in cruciform and disposed at the aft end of the missile. The actuation system arrangement allows passage of the missile through existing launchers having typical volume restraints.

3,711,041

Patent Not Issued For This Number

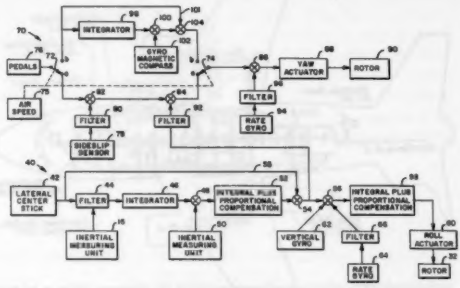
3,711,042

AIRCRAFT CONTROL SYSTEM

Paul S. Rempfer, Heath, Ohio; Alan J. Robertson, Topsfield; Lloyd E. Stevenson, Wakefield, and Joseph S. Koziol, Jr., Newtonville, all of Mass., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed July 13, 1970, Ser. No. 54,271
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 D **10 Claims**

An aircraft control system, particularly suited to rotary wing aircraft, in which longitudinal acceleration and course rate commands are derived from a manual control stick to control translational velocity of the aircraft along a flight path. In the collective channel the manual controls provide vertical velocity commands. In the yaw channel the manual controls provide sideslip or heading rate commands at high or low airspeeds, respectively. The control system is particularly suited for rotary wing aircraft and permits pilots to fly along



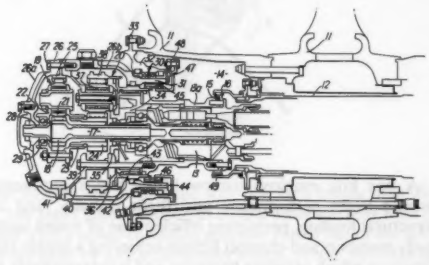
prescribed flight paths in a precise manner with relatively low work load.

3,711,043

GROUNDWHEELS FOR AIRCRAFT

Alan Cameron-Johnson, St. Albans, England, assignor to Hawker Siddley Aviation Limited, Kingston-upon-Thames, Surrey, England

Filed Sept. 21, 1970, Ser. No. 73,871
Claims priority, application Great Britain, Oct. 13, 1969, 50,216/69
Int. Cl. B64c *25/00*
U.S. Cl. 244—50 **11 Claims**



An aircraft wheel drive unit has a fluid-pressure-operated motor housed within the wheel and two planetary gear stages housed in a gearbox outboard of the motor, the final drive being transmitted from a ring gear of the second gear stage, which is inboard of the first stage, to the wheel through an output drive quill coupled, through a disc-type clutch if desired, to a flanged final drive member bolted to the wheel. The gear box and the motor are supported from the wheel by a bearing assembly within the flanged final drive member and surrounding the inner end of the gearbox. The motor has a torque coupling to the end of the non-rotary wheel axle to prevent rotation of the motor stator and gearbox. Structural integrity is given to the wheel-supporting assembly by providing a structural connection from an extension of the motor body to a spider secured within the gearbox through a non-rotary planet gear cage of the second gear stage.

3,711,044

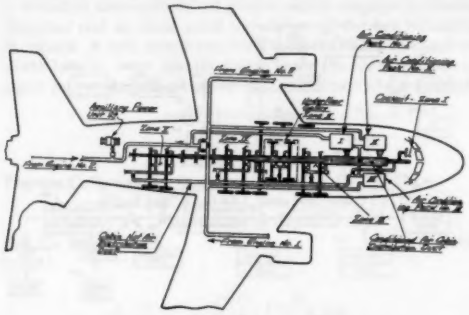
AUTOMATIC INTERFACE CONTROL SYSTEM

Dan S. Matulich, Rolling Hills, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

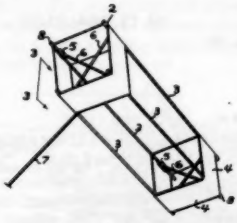
Filed March 17, 1971, Ser. No. 125,158
Int. Cl. B64d *13/08*; **165** *15*
U.S. Cl. 244—118 P **9 Claims**

An automatic interface control system is provided for use between an aircraft environmental control system and a two

spool auxiliary power unit. In response to the requirements of the environmental control system, the speed of one of the auxiliary power unit spools is controlled by the interface control system.

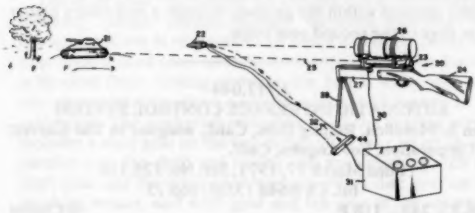


3,711,045
KITES
Raymond Prunty Holland, Jr., 1702 West Third Street, Roswell, N. Mex.
Filed Nov. 27, 1970, Ser. No. 93,277
Int. Cl. B64c *31/06*
U.S. Cl. 244—153 R **5 Claims**



A box kite employs narrow lifting bands producing improved flight performance and flight stability, and lighter structural loading, permitting efficient use of round-sectioned body members and channel fittings achieving a simple yielding structure which prevents breakage and is inexpensively manufactured and easily assembled and disassembled. The construction is suitable for modular arrangement having several individual kites attached abreast.

3,711,046
AUTOMATIC MISSILE GUIDANCE SYSTEM
Hamilton Barhydt, 8211 Billowvista Drive, Playa del Rey, Calif., and Spencer D. Howe, 7954 Stewart Avenue, Los Angeles, Calif.
Filed Oct. 22, 1969, Ser. No. 870,077
Int. Cl. F42b *15/04*; **F41g** *7/02, 7/14*
U.S. Cl. 244—3.12 **23 Claims**

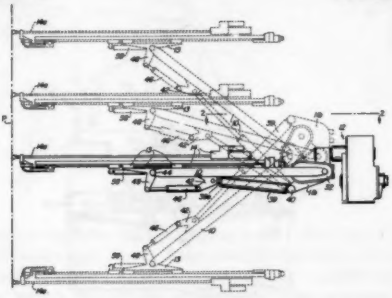


The automatic missile guidance system comprises a sight with which a gunner establishes a line-of-sight from the gun position to the target. When the missile is launched, a source of pulsating, radiant energy on the rear of the missile is detected by a guidance unit at the sight. The guidance unit produces steering commands related to the deviation of the missile from the line-of-sight. Means interconnecting the guidance unit and the missile transmits the guidance signals to the missile to direct it along the line-of-sight. This guidance unit to missile connection may be wires which unreel from the missile as it proceeds towards its target.

ERRATUM

For Class 248—330 see:
Patent No. 3,711,021

3,711,047
ROCK DRILL POSITIONING MACHINE
Paul C. O'Leary, Salt Lake City, Utah, assignor to Bradley Pulverizer Company, Allentown, Pa., a part interest
Filed Dec. 14, 1970, Ser. No. 97,889
Int. Cl. E21c *9/00, 5/08*
U.S. Cl. 248—2 **13 Claims**

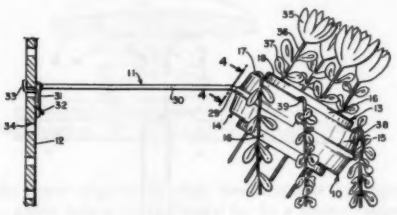


A mount for a standard rock drill and feed unit is pivotally attached to the work end of a boom, which is swingably attached to preferably a rotary mount of unique type for positioning and holding such rock drilling unit at any selected location around a complete drilling circle whose size is determined by the extent of offset of the drill-carrying end of the boom from the axis of rotation of the rotary mount. The means swingably attaching the boom to the rotary mount is unique, in that it functions as a lever, utilizing a link or links and gearing attached to the held end of the boom to automatically advance or retract such boom longitudinally by proper amounts to maintain the drill-carrying end of the boom within a given transverse plane extending at right angles to the axis of rotation of the rotary mount, rather than within what would otherwise be an arcuate path of travel transversely of such axis. The machine also preferably includes a unique hydraulic pantograph arrangement for automatically maintaining the drilling unit mount at a given angle to the work throughout positioning movement of the boom. The special rotary mount utilizes power cylinders of standard leak-free type, together with gearing, to exert positive holding action on the boom at off-vertical positions. The special hydraulic pantograph utilizes slave piston and cylinder units to transmit hydraulic pressures generated by operation of the boom to hydraulic means for rotating the drilling unit mount about its pivot axis at the work end of the boom.

3,711,048
DISPLAY HOLDER FOR ARTIFICIAL FLOWERS AND THE LIKE
David R. Thalenfeld, 162-41 Powells Cove Blvd., Beechurst, N.Y.
Filed Sept. 25, 1970, Ser. No. 75,525
Int. Cl. A47f *5/00*
U.S. Cl. 248—309 **5 Claims**

The invention is directed to a novel and improved display device, for use particularly in the display for sale of artificial

flowers. The new display device, typically of molded plastic construction, provides grid structure for the advantageous support of artificial flowers affording attractive display and



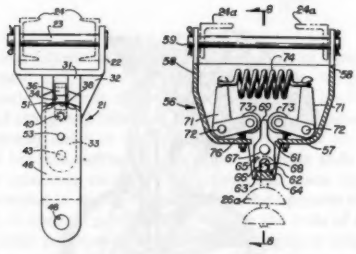
convenient handling. The new device readily accommodates the simultaneous display of upright, straight-stemmed flowers as well as so-called "droopers" and "hangers."

3,711,049

MECHANICAL LOAD LIMITER FOR POWER LINES

Roland K. Grannis, San Mateo, Calif., assignor to Pacific Utilities Supply Co., San Francisco, Calif.

Filed Dec. 9, 1971, Ser. No. 206,322
Int. Cl. H02g 7/18
U.S. Cl. 248—64 **10 Claims**



A limiter is fixed at one end to a power line tower, or pole arm, and at the other to an insulator attached to a power line. Movement of the line beyond a predetermined limit in either direction causes the limiter to release the insulator, dropping the line and preventing damage to the tower. In one modification, angular movement of the insulator upsets a toggle held in position by a latch in such manner that a cam surface attached to the insulator lifts the latch as the insulator pivots beyond a predetermined angle. The cam shape determines the angle which causes unlatching. In another modification, the horizontal component of the force on the tower is resisted by a spring-loaded lever system; and when the force exceeds a predetermined amount, the spring releases the lever system and the insulator is released.

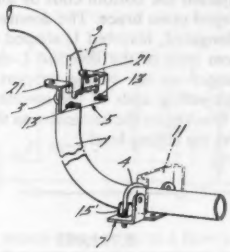
3,711,050

UNIVERSAL TAILPIPE BRACKET

David A. Case, Prior Lake, Minn., assignor to Tenneco Inc., Racine, Wis.

Filed Feb. 9, 1971, Ser. No. 113,955
Int. Cl. F16l 3/10
U.S. Cl. 248—74 R **9 Claims**

A specially shaped bracket, designed for use in the mounting of automotive tailpipes or exhaust pipes, has flange sections that enable it to be attached on the one hand to the body or chassis of an automobile and on the other hand to a pipe



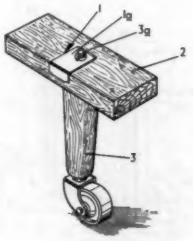
clamp in a wide variety of arrangements thereby standardizing the pipe mounting structures and consequently reducing the cost thereof.

3,711,051

SELF LOCKING ELEMENTS

Billy Hebden, Rossendale, England, assignor to Silentnight Limited, Lancashire, England

Filed Feb. 17, 1971, Ser. No. 116,040
Int. Cl. F16m 11/16
U.S. Cl. 248—188 **3 Claims**



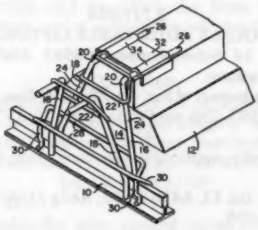
A self locking nut of U-shape with one limb longer than the other. The short limb is shaped as a barb while the long limb is provided with a screw-threaded aperture raised out of the surface of the limb by a flexible border which, in use, deforms so as to lock a bolt passed through the aperture against return movement.

3,711,052

SUPPORT HANGER FOR INTERIOR LIGHTING FIXTURE

Kenneth C. Hoffman, Vicksburg, Miss., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 28, 1971, Ser. No. 110,422
Int. Cl. F21r 3/02
U.S. Cl. 248—201 **6 Claims**



A support hanger for mounting and supporting each end of an interior lighting fixture well above the ceiling supporting

frame, in a vaulted type ceiling. The support hanger includes a pair of upstanding, converging, substantially inverted L-shaped members joined at their upper bend by a cross brace and joined adjacent the bottom ends by an offset, elongated, inverted U-shaped cross brace. The downwardly directed fingers of the elongated, inverted U-shaped cross brace coact with the bottom ends of the inverted L-shaped members to mount the hanger on the ceiling support T-bars while the horizontally projecting ends of the inverted L-shaped members engage a bracket on the luminaire to thereby support the luminaire above the ceiling level.

3,711,053

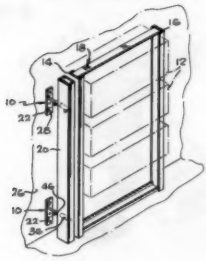
TELESCOPING WALL MOUNTING BRACKET FOR ELECTRICAL RACKS

King B. Drake, Los Angeles, Calif., assignor to Dracon Industries, Chatsworth, Calif.

Continuation of Ser. No. 814,723, April 9, 1969, abandoned, which is a continuation of Ser. No. 634,313, April 27, 1967, Pat. No. 3,468,429. This application Nov. 18, 1970, Ser. No. 90,838

Int. Cl. H47f *7/00*

U.S. Cl. 248—298 **6 Claims**



The telescoping wall mounting bracket comprises a foot adapted to be wall-secured, to which is permanently fixed the smaller of two telescoping members. The larger telescoping member surrounds the smaller, and telescopic extension is limited by cables attached between the members. The larger member is securable into an electrical rack structure, or into supporting means therefor so that the rack structure can be moved away from or toward the wall upon which it is mounted for access to the rear thereof or general adjustment of the spatial separation of the structure relative to the wall.

3,711,054

CONTINUOUSLY ADJUSTABLE LIFTING DEVICES

Fritz Bauer, 14 Schulzstrasse, D-8503 Altdorf near Nuremberg, Germany

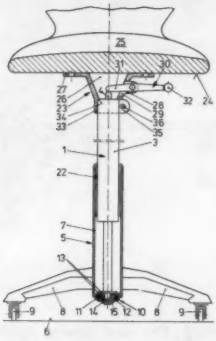
Continuation-in-part of Ser. No. 881,436, Dec. 2, 1969, Pat. No. 3,656,593. This application June 19, 1970, Ser. No. 47,846

Claims priority, application Germany, June 19, 1969, P 19 31 012.4

Int. Cl. A47b *95/00*; A61g *15/00*

U.S. Cl. 248—400 **6 Claims**

A device for the stepless height adjustment of the seat surface member of a chair, stool or the like using a fluid spring member with a tubular housing which simultaneously serves as a part of the supporting column of the chair, stool or the like, the piston rod of the fluid spring member extending downwardly and being mounted with lateral play at its lower



end in the base of a guide tube forming another part of the said column.

3,711,055

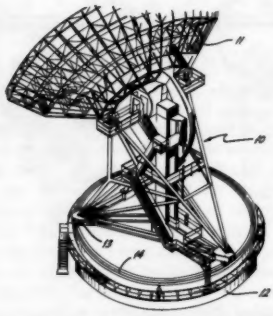
EQUALIZING STUB AXLE LINKAGE SUSPENSION

Roger T. Schultz, Los Altos; Jack M. Vickland, Palo Alto, and Raymond E. Sickler, Los Altos, all of Calif., assignors to Philco Ford Corp., Philadelphia, Pa.

Filed March 27, 1970, Ser. No. 23,310

Int. Cl. B61f *3/00*; B61j *1/12*; H01g *3/04*

U.S. Cl. 248—425 **4 Claims**



A load-bearing apparatus for rail-mounted satellite tracking antennas, or other massive structures, which apparatus utilizes a four bar wheel-supporting linkage to maximize the area of contact between the supporting wheels and the rail, and hence to minimize the contact stresses between such wheels and rail.

3,711,056

SEAT-ADJUSTING MECHANISM, ESPECIALLY FOR VEHICLE SEATS

Gunter Gmeiner, Sindelfingen, and Christian Grabner, Maichingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Filed July 14, 1970, Ser. No. 54,812

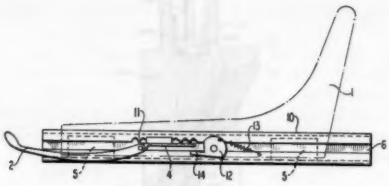
Claims priority, application Germany, July 22, 1969, G 69 28 888.6

Int. Cl. F16m *13/00*

U.S. Cl. 248—429 **7 Claims**

A seat-adjusting mechanism, particularly for vehicle seats, in which a seat frame is movably arranged in the vehicle longitudinal direction by slide members displaceable in guide rails and in which the fixing of the pre-selected seat position

takes place by an engageable toothed arrangement; the slide members of one guide rail abut at least within the lower area thereof at the walls surrounding the same and the clearance

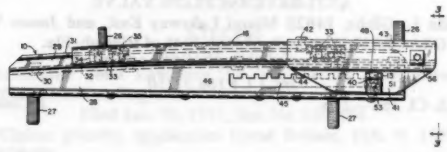


between the upper edge of the slide members and the upper wall of the guide rails is compensated for by a spring-loaded cam rotatably supported between the slide members at the side walls of the seat frame.

3,711,057
HEAVY DUTY SEAT ADJUSTER

Thomas O. Marx, Rockton, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Dec. 28, 1970, Ser. No. 101,804
Int. Cl. B60n 1/08
U.S. Cl. 248—430 **10 Claims**



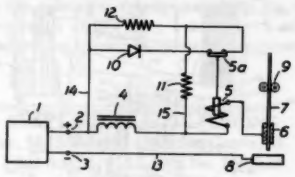
This seat adjuster is useful interchangeably as either a right or left-hand unit, thus eliminating the necessity for providing two slightly different units to form a pair. The latch in each unit is of elongated form and slidably guided at opposite ends in registering holes in the opposite side walls of an inverted channel bracket carried on the upper movable slide so as to operate crosswise relative to a lower fixed track channel in slots provided in registering relation in the opposite side walls thereof. A channel portion intermediate the ends of the latch has the edge portions of its side walls engaging in neighboring notches provided in evenly spaced relation along one side of the aforesaid slots, thus providing four points of interlocking engagement as against only two in previous constructions. The latch has compression springs caged under preload on its opposite ends on extensions of the web portion of the channel between attaching brackets staked onto the ends of the extensions and washers slidably guided on the extensions and abutting the opposite side walls of the fixed lower track channel, so the latch is normally held in locked position under balanced spring pressure but can be pulled endwise in either direction to unlocked position in which elongated notches in the upper edges of the side walls of the channel register with the one set of notches in one of the slotted side walls of the fixed lower track while the one end of the channel also comes clear of the other set of notches in the other side wall of the fixed lower track.

3,711,058
APPARATUS FOR INDUCTOR CURRENT CONTROL IN ELECTRIC ARC WELDING

Klas Bertil Weman, Laxa, Sweden, assignor to Elektriska Svetsningsaktiebolaget, Gothenburg, Sweden

Filed Jan. 5, 1971, Ser. No. 103,982
Claims priority, application Sweden, Jan. 14, 1970, 386/70
Int. Cl. B23k 9/10
U.S. Cl. 219—131 WR **5 Claims**

A D.C. arc welding current contains an inductor connected in parallel with a shunt branch containing a half-wave rectifier and a resistor. The rectifier is poled so as to block the current produced in said shunt branch by the voltage induced in the inductor on decay of the magnetic flux in the inductor. Time-

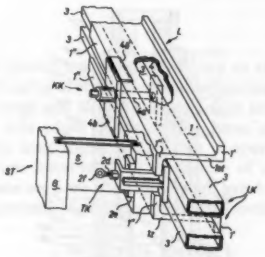


delayed switching means responsive to a flow of welding current are provided for reducing the conductivity of the shunt branch from a first level to a second level (which may be zero).

3,711,059
GIRDLING SYSTEM FOR CONCRETE SHUTTERING

Laurenz Kistler, Chamerstr. 117, Zug, Switzerland

Filed Jan. 22, 1971, Ser. No. 108,771
Claims priority, application Germany, Jan. 23, 1970, P 20 03 106.5
Int. Cl. E04g 11/50
U.S. Cl. 249—219 R **12 Claims**



A bar unit, formed of longitudinal interconnected strips of spaced angled profiles, leaving a front longitudinal unobstructed slit, and a back slit, broken by cross straps but permitting manual access to the back of the bar unit, has braces, adapted to be secured to concrete form or mold boards attached thereto by brace clamps which contain screw-clamping elements, the clamp elements penetrating through the front slit to provide clamping pressure against the front faces of the profile. The profiles are interconnected, or connectable to further brace clamps, by means of inserted coupling bars, telescopically receivable in the bar unit, and held therein by coupling clamps utilizing counter plates pressing the coupling bars against the profiled faces of the strips of the bar unit, to form a rigid, interconnectable structure, which is longitudinally adjustable and on which the form braces can be placed, as desired, and in accordance with load requirements.

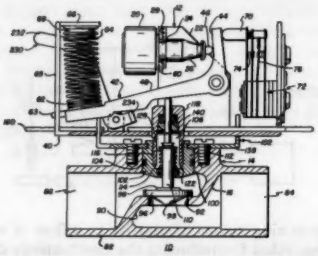
3,711,060
ZONE CONTROL VALVE ASSEMBLY

Richard Weinstein, Evanston, Ill., assignor to International Telephone and Telegraph Company, New York, N.Y.

Filed Oct. 12, 1970, Ser. No. 80,011
Int. Cl. F16k 31/00
U.S. Cl. 251—11 **10 Claims**

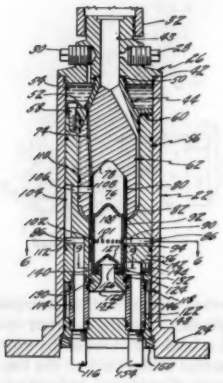
Valve assembly for zone control valves of the type employed in hydronic temperature control systems. The valve incorporates a control unit which can readily be separated from the valve structure without emptying fluid from the system. An improved sealing structure provides the valve itself and al-

lows the separation noted above. In this way, the control unit and the valve seals can be replaced readily in the field, are



long-lived and capable of continuous trouble-free usage. Variations in the control of the heating system are also shown.

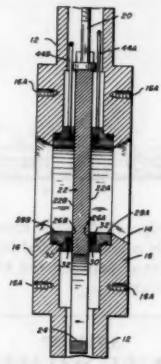
3,711,061
SHOCK WAVE GENERATOR
E. Marston Moffatt, Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Oct. 19, 1971, Ser. No. 190,502
Int. Cl. F16k *31/12*
U.S. Cl. 251—29 **4 Claims**



Apparatus for generating a shock front includes a fluidically actuated projectile-like valve member for rapidly opening and closing fluid passages between a reservoir within the valve member and a tube or pipe in which the shock wave is to be generated. Also, an improved fluid snap-valve is driven by a dual-surfaced piston having a high pressure on a smaller surface and a lower pressure on an oppositely-acting larger surface; increase of pressure on the larger surface snaps the piston to open the valve in a toggle-like fashion.

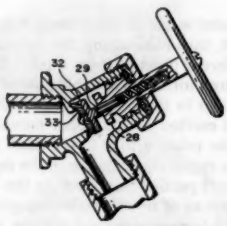
3,711,062
EXPANDABLE SEAL GATE VALVE
Creal E. Kirkwood, 1423 South 103rd East Avenue, Tulsa, Okla.
Filed Nov. 2, 1970, Ser. No. 86,114
Int. Cl. F16k *25/00*
U.S. Cl. 251—172 **2 Claims**

Improved means for effecting sealing between the body sealing surface and the gate member of a valve in which the gate member is positionable against a body sealing surface, the body sealing surface having an annular groove therein, the improvement including expandable gasket means positioned in the annular groove, a pressure passageway in the body communicating the expandable gasket means to the exterior of the valve body, and means exterior of the valve body for applying



hydraulic pressure to expand the expandable gasket means into sealing contact with the gate member.

3,711,063
ANTI-REVERSE FLOW VALVE
John L. Gibbs, 14820 Miami Lakeway East, and James W. Gibbs, 8027 West 14th Avenue, both of Hialeah, Fla.
Filed Oct. 8, 1971, Ser. No. 187,754
Int. Cl. F16k *31/50*
U.S. Cl. 251—276 **2 Claims**

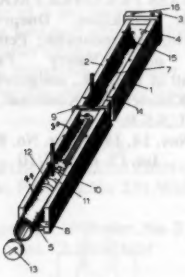


An anti-reverse flow valve for bibcocks, hose bibs, faucets and the like having a pair of telescopically mounted valve stems, the outer valve stem having an axially disposed bore forming a guide for the inner valve stem, the latter having longitudinally disposed grooves on its periphery preventing the creation of a vacuum in the bore upon the sliding movement of the inner valve stem. The bore receives a coil spring which yieldingly urges the main valve mounted on the inner valve stem to seat on an elevated valve seat whereby upon threading the outer valve stem to open the main valve, the pressure of water causes the inner valve stem to slide inwardly of the outer valve stem against the coil spring pressure and permit the discharge of water therethrough. Upon the loss of water pressure the coil spring causes the main valve having a peripheral depending skirt portion to be brought to seat instantaneously on the elevated valve seat with the skirt portion engaging the base of the valve seat to prevent a reverse flow of water.

3,711,064
PIPE PUSHER
John J. Kielczewski, 4018 Zuck Road, Erie, Pa.
Filed Feb. 1, 1971, Ser. No. 111,191
Int. Cl. E21b *19/00*
U.S. Cl. 254—29 R **5 Claims**

A pipe pusher made up of two parallel side members defining a space therebetween, spacers holding the side members in

spaced relation with each other, parallel opposed slots on the inner sides of said frames, a cylinder backup member adapted to be removably received in each pair of said slots, the hydraulic cylinder having one end connected to said backup plate



and its piston rod connected to means for connecting to a pipe to be pushed. The frames have a wall engaging member on one end so that when the pipe is connected to said piston rod and said plate engages a vertical wall, the pipe may be pushed through ground such as under driveways and the like.

3,711,065

MARINE WINCH

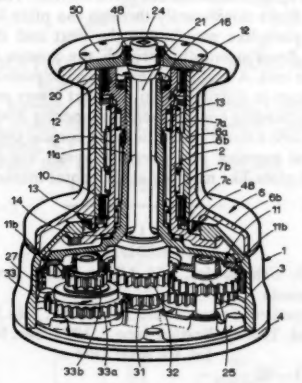
Christopher John Lawrence, 98 The Arches, Ravenscourt Place, London, England

Filed Jan. 25, 1971, Ser. No. 109,484

Claims priority, application Great Britain, Feb. 9, 1970, 6,170/70

Int. Cl. B66d *1/30*

U.S. Cl. 254—150 R **3 Claims**



This invention relates to a marine winch for hauling sheets, lifts, halyards and analogous tackle.

The invention provides a winch having a circular main casing adapted to be fixed to a deck, a winch drum rotatable about the axis of an upper generally cylindrical turret of said casing, first unidirectional clutch means operatively located between the drum and the turret and permitting relative rotation between the drum and the turret in one direction only; a circular sub-casing having an upper sleeve portion extending through and coaxial with said turret, said sub-casing being rotatable about the axis of the turret, second unidirectional clutch means operatively located between the sleeve and the drum and permitting relative rotation between said sleeve and said from in one direction of rotation only, an operating spindle located axially of the turret and rotatable relative thereto, gearing adapted to transmit drive from said operating spindle to a flared circular lower part of said rotatable sub-casing, said gearing including two output gear wheels engaging diametrally opposite regions of a toothed ring formed within said flared circular lower portion of said rotatable sub-casing.

Preferably the gearing is arranged to drive the output gear wheels in two ratios of say 3.5 : 1 and 11 : 1 selectable on rotating the operating spindle in opposite directions.

3,711,066

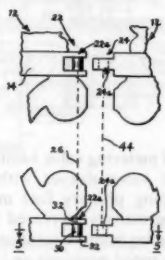
SNAP LOCK PLASTIC FENCING

Leo P. Niemiec, 5627 Emerson, Morton Grove, Ill.

Filed Aug. 6, 1971, Ser. No. 169,625

Int. Cl. E04h *17/14*

U.S. Cl. 256—19 **2 Claims**



An integral plastic fence section having an expansive main body with a plurality of stake members projecting downwardly from a lower edge and adapted to be driven into the ground. The opposite side edges of the section have hinge members that releasably snap together and that cooperate with each other to provide for rotational movement of adjacent interconnected fence sections about the hinge axis to provide for a variety of alignments of multiple connected sections.

3,711,067

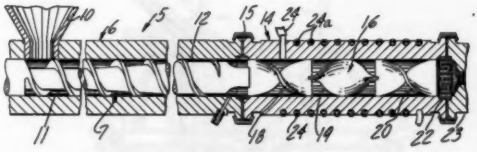
EXTRUDING AND MIXING EQUIPMENT

Lloyd Kovacs, Somerset, N.J., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Jan. 8, 1971, Ser. No. 105,010

Int. Cl. B29f *3/02, 3/08*

U.S. Cl. 259—191 **10 Claims**



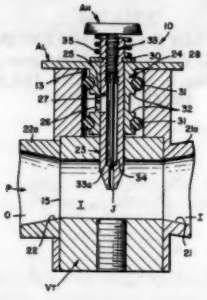
Equipment including material-forwarding and mixing facilities arranged in tandem with respect to the direction of flow of a potentially thermoplastic material to achieve a high degree of homogenization of the heat content and composition of the discharged product. The mixing facility occurs downstream from the material-propulsion facility and is constructed to effect multitudinous channeling in conjunction with working of the material resulting from friction between the material and the inner surface of a barrel surrounding the mixing facility. The mixing facility may be rotated to promote the action by barrel on the material.

3,711,068

CARBURETOR FUEL METERING VALVE

John C. Perry, 6248 Farmdale Avenue, North Hollywood, Calif.

Filed Sept. 25, 1970, Ser. No. 75,486
Int. Cl. F02m 9/08
U.S. Cl. 261—41 B 4 Claims



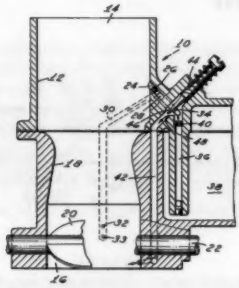
A carburetor fuel metering valve having slidably interfitting relatively rotatable valve sleeves with a pair of circumferentially overlapping primary fuel metering ports whose overlap area is progressively increased to increase fuel flow through the valve upon relative rotation of the valve sleeves from idling to high speed positions and a pair of high speed fuel metering ports which enter into overlapping relation upon relative rotation of the valve sleeves to high speed position to increase high speed fuel flow through the valve, and a high speed fuel adjustment valve for adjusting the fuel flow through the metering valve independently of the fuel metering ports in the high speed setting of the valve sleeves and without altering the metering port areas.

3,711,069

HIGH VELOCITY CARBURETOR IDLE SYSTEM

Laszlo Hideg, Dearborn Heights, and Irving N. Bishop, Farmington, both of Mich., assignors to the Ford Motor Company, Dearborn, Mich.

Filed Aug. 15, 1969, Ser. No. 850,456
Int. Cl. F02m 3/08
U.S. Cl. 261—41 D 9 Claims



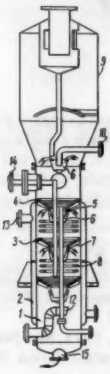
The idle system has separate idle air and idle air/fuel passages. The air passage is branched from the air-borne air inlet portion of the main induction passage and its opposite end opening is straddled by the throttle valve in its idle position. A fuel and air mixing chamber is closely adjacent the idle fuel jet so as to mix the air and fuel in a short period. The fuel and air emulsion passage is of constant cross sectional area, and small and essentially of the same flow area as the orificed outlet of the mixing chamber so as not to noticeably decrease the velocity of the mixture in the emulsion passage. The velocity in the emulsion passage is high and prevents the discreet formation of plugs of fuel and air.

3,711,070

FOAM-TYPE APPARATUS FOR CARRYING OUT HEAT AND MASS TRANSFER PROCESSES

Sergei Fedotovich Khokhlov, Dnepropetrovsk; Viktor Petrovich Yakovin, Severodonetsk; Petr Ivanovich Sysoev, Severodonetsk, and Valery Pavlovich Egorov, Severodonetsk, all of U.S.S.R., assignors to Severodonetsky Ordena Lenina Khimichesky Kombinat, Severodonetsk Luganskoi Oblasti, U.S.S.R.

Filed Nov. 14, 1969, Ser. No. 876,826
Int. Cl. B05b 7/10
U.S. Cl. 261—79 A 1 Claim



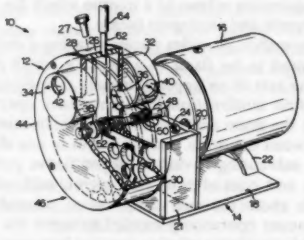
Apparatus for effecting heat and mass transfer processes comprises a vertical array of plate-like members each constituted of a pipe wound in the form of a conical coil with intermediate spaces between the turns thereof. The liquid to be processed flows downwardly through the plate-like members from one plate-like member to the next and the gas to be processed flows upwardly through the spaces between the turns of the coil. A foam is formed on each plate-like member and this foam is distributed to the next lower member via a vertically extending conical member tapering downwardly and projecting into a downwardly tapering conical overflow vessel. The conical member and overflow vessel are disposed just below each plate-like member at the center thereof.

3,711,071

HUMIDIFIER

Nikodem N. Urbanowicz, 151 Albion Street, Brantford, Ontario, Canada

Continuation-in-part of Ser. No. 59,487, July 30, 1970, abandoned. This application June 7, 1971, Ser. No. 150,488
Int. Cl. B01f 3/04
U.S. Cl. 261—92 13 Claims



A device for controllably increasing the relative vapor content, particularly the humidity of a gas comprising, a body hav-

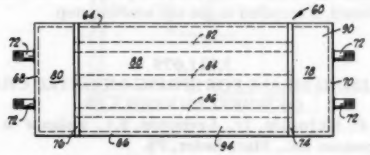
ing a chamber with a sump in the lower portion, means for admitting fluid opening into said sump, disc means in said chamber rotatable with a sector of its marginal edge in said sump, means for rotating said disc at a speed which is sufficiently high to nebulize fluid within said chamber by the agitating action of the rotating disc member so as to increase the relative humidity of a gas passing through the chamber, inlet means opening into said chamber for admitting gas to said chamber and outlet means opening out of said chamber for withdrawing gas therefrom, said inlet and outlet means being disposed on opposite sides of said disc member.

3,711,072

APPARATUS FOR OXYGENATION OF LIQUIDS

David B. Waldenville, P.O. Box No. 231-West, Oklahoma City, Okla.

Filed April 23, 1970, Ser. No. 31,307
Int. Cl. B01f *3/04*
U.S. Cl. 261—122 **6 Claims**



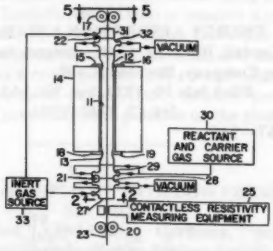
Apparatus for large volume oxygenation of water and the like, such apparatus being connectable to a suitable source of air or oxygen pressure and including distribution means for releasing air under pressure over a relatively large area within a sealed enclosure having at least a portion of the enclosure formed from permeable substance of predetermined porosity to air pressure such that the air or oxygen is released in finely divided form into contact with the water to effect oxygenation thereof.

3,711,073

CONTINUOUS PROCESSING FURNACE AND METHOD OF USING THE SAME

Bing C. Chu, Raleigh, N.C.; David J. Fischer, Corning, N.Y., and Hans J. Kunz, Raleigh, N.C., assignors to Corning Glass Works, Corning, N.Y.

Filed July 14, 1969, Ser. No. 841,409
Int. Cl. F27b *9/28*
U.S. Cl. 263—3 **23 Claims**



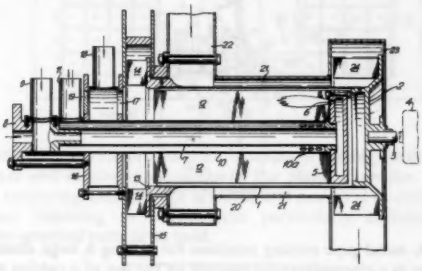
A furnace for continuously processing elongated ribbons or webs of materials such as semiconductors, metals or glasses. Both ends of a tubular reaction chamber disposed in a heating system are provided with end caps which accommodate all gas inlet and outlet connections and which act as gas locks. A mixture of reactant and carrier gas enters the furnace through one end cap and leaves the furnace through the other. This furnace may be used for such chemical processes as diffusion, surface oxidation, etching, metallization and other pyrolytic processes.

3,711,074

HEAT EXCHANGER APPARATUS

Philip Crawford Sugg, Redhill, England, assignor to Thorn Heating Limited, Crawley, Sussex, England

Filed Jan. 25, 1971, Ser. No. 109,437
Claims priority, application Great Britain, May 28, 1970, 25,730/70
Int. Cl. F23l *15/04*
U.S. Cl. 263—20 **12 Claims**



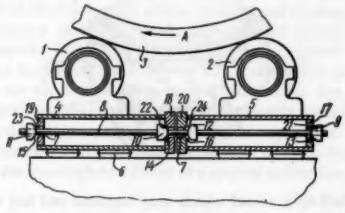
Heat exchanger apparatus in which heat is transferred between two moving fluids, one of said fluids being the heating fluid and the other of said fluids being the fluid to be heated, which comprises a first flow path for said heating fluid, a second flow path for said fluid to be heated, a rotatable cylinder separating said first flow path from said second flow path, and fan or pump means operatively associated with said first and said second flow paths to promote movement of said heating fluid relative to one surface of said rotatable cylinder and to promote movement of said fluid to be heated relative to the other surface of said rotatable cylinder.

3,711,075

SUPPORTING DEVICE OF ROTARY FURNACES

Georgy Vladimirovich Raevsky; Semen Mikhailovich Biletsky, and Eduard Jurievich Burmenko, all of Kiev, U.S.S.R., assignors to Institut Elektrosvarki Imeni E. O. Patona Akademii Nauk Ukrainskoi SSR, Kiev, U.S.S.R.

Filed Feb. 1, 1971, Ser. No. 111,323
Int. Cl. F27b *7/22*
U.S. Cl. 263—33 R **5 Claims**

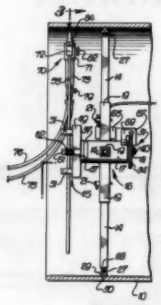


A supporting device for a rotary furnace, in which a rod is loosely passed through two frames respectively carrying rollers which rotatably support the furnace. Support members are mounted on the rod for contacting the frames to limit relative longitudinal displacement therebetween and between the rod and the support members while also causing the rollers to be tightly pressed against the furnace along their entire line of contact during the rotation of the furnace.

3,711,076
PIPE CUTTING MACHINE

Fay M. Goetz, 16542 Summerdale, La Mirada, Calif.

Filed Dec. 4, 1970, Ser. No. 95,162
Int. Cl. B23k 7/04
U.S. Cl. 266—23 NN 7 Claims

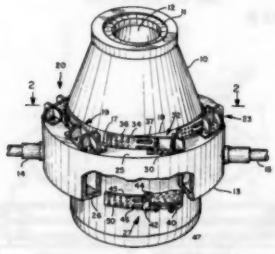


A metal pipe cutting machine for cutting a large diameter pipe in a circumferential manner by the use of a cutting torch rotatably supported to travel about the interior surface of the pipe. An adjustable mounting unit for mounting the machine within the pipe provides for manually decoupling the rotatable support for the cutting torch from rotatable driving means provided for the machine to enable the cutting torch to be freely rotated during the setting-up of the machine within the pipe. This permits the cutting torch to be aligned to travel about the interior surface of the pipe along a predetermined circumferential path and held in the aligned position by the adjustments provided on the mounting unit when the rotatable support for the cutting torch is manually coupled to the rotatable driving means during the cutting operation of the machine.

3,711,077
STABILIZED MOUNTING FOR MOLTEN METAL VESSELS

Rashed Naim Nagati, New Castle, Pa., assignor to Pennsylvania Engineering Corporation

Filed Aug. 27, 1970, Ser. No. 67,480
Int. Cl. C21c 5/50
U.S. Cl. 266—36 P 11 Claims



The shell of a vessel which may become red hot when it is occupied by molten metal is supported inside of a concentric trunnion ring. A plurality of tangs have their corresponding ends anchored at circumferentially spaced points around the top of the trunnion ring. The opposite corresponding ends of the tangs extend tangentially of the outer periphery of the shell to which they are fastened. Another aligned set of tang members is spaced around the bottom of the trunnion ring. In the bottom set, the tangs make a yielding connection with their anchoring elements on the bottom of the trunnion ring so that the bottom set carries no load until the trunnion ring and shell are tilted.

3,711,078
PROCESS FOR THE TREATMENT OF THE CRUDE MIXTURE RESULTING FROM THE PREPARATION OF AN ADIPONITRILE BY DIMERIZATION

Henri Lefebvre, Jemeppe-sur-Sambre, Belgium, assignor to Solvay & Cie, Brussels, Belgium

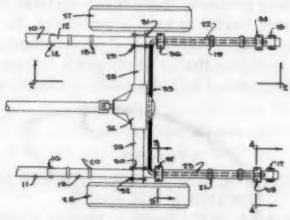
Filed June 12, 1970, Ser. No. 45,724
Claims priority, application France, June 16, 1970, 7020040
Int. Cl. C07c 121/26
U.S. Cl. 260—465.8 A 7 Claims

A portion of the crude reaction mixture which is obtained by dimerization of a nitrile with an alkali or alkaline earth metal amalgam is continuously withdrawn. The withdrawn portion is separated into an organic liquid phase and a solid phase composed of the salt formed during the dimerization reaction or as a result of neutralization after the dimerization. The salt is washed with propionitrile which has been formed as a secondary product during the dimerization and the washing liquid is added to the organic liquid phase. The entire organic phase is distilled in order to recover each component thereof; the adiponitrile is recovered and the propionitrile which has been isolated, is recycled to the salt washing step.

3,711,079
STABILIZING MEANS FOR SPRING-MOUNTED CHASSIS OF WHEELED VEHICLES

Howard P. McJunkin, Jr., Lexington, Ky., assignor to Hurst Performance Inc., Marminster, Pa.

Filed Dec. 10, 1970, Ser. No. 96,694
Int. Cl. B60g 21/00
U.S. Cl. 267—11 R 4 Claims

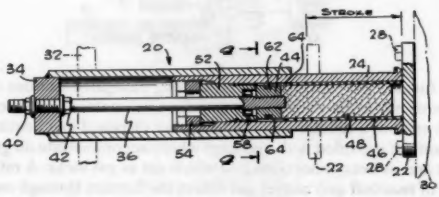


A wheeled vehicle having a live axle suspended on a pair of leaf springs attached to the chassis employs a unitary stabilizing bar supported by both springs and in isolated mounting relation to the chassis frame and to the axle housing.

3,711,080
ENERGY ABSORPTION APPARATUS

Giles A. Kendall, Burbank, Calif., assignor to Menasco Manufacturing Company, Burbank, Calif.

Filed July 19, 1971, Ser. No. 163,796
Int. Cl. F16f 9/30
U.S. Cl. 267—116 12 Claims



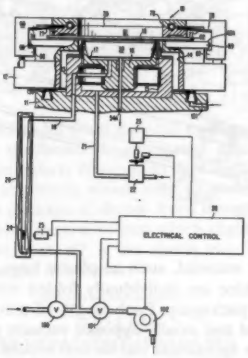
An energy absorption apparatus including a piston being movably mounted within a cylinder, a sleeve forming the in-

terior wall of the cylinder and being in contact with the piston, the sleeve having formed therein a plurality of longitudinal slots, a compressible solid material located within the cylinder and capable of passing from one side of the piston to the other side through the slots.

3,711,081
SEMICONDUCTOR WAFER CHUCK

Rene P. Cachon, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed March 31, 1970, Ser. No. 24,256
Int. Cl. B23q *3/08*; B25b *11/00*
U.S. Cl. 269—21 **8 Claims**



This patent discloses apparatus for accurately aligning a semiconductor wafer to a photo mask, the apparatus disclosed comprising a base and a frame for the apparatus. The base portion includes a chamber in which is mounted a piston which is restrained from lateral movement while permitting vertical reciprocation thereof. In the upper portion of the piston is a socket which supports a gimbal, the gimbal including means for receiving a wafer thereon. Mounted on the frame is a carriage which includes means for positioning a mask in superimposed overlapping relation relative to the gimbal while clamping the mask to the frame. Also disclosed is fluid supply means which is connected to the socket so that the gimbal will float on a cushion, for example, of air. The piston is provided with elevating means to cause the piston to raise beyond the point of contact of a wafer mounted on the gimbal with the mask. Also disclosed is means responsive to the increase in fluid pressure which results from the contact of the wafer with the mask for stopping the elevating means and thus the piston. Thereafter the piston is lowered a preset and predetermined amount to thereby space the wafer from the mask permitting adjustment of the base relative to the frame.

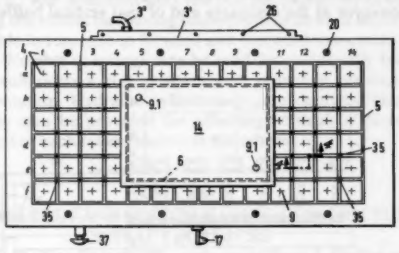
Also disclosed is a novel gimbal with a wafer alignment apparatus built in so as to automatically initially position the wafer in a desired predetermined position on the gimbal.

3,711,082
FASTENING EQUIPMENT WITH LOW PRESSURE SUCTION

Heinz Seidenfaden, Varel/Oldb., Germany, assignor to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Germany

Filed April 28, 1970, Ser. No. 32,581
Claims priority, application Germany, May 9, 1969, P 19 23 833.6
Int. Cl. B25b *11/00*
U.S. Cl. 269—21 **16 Claims**

A fastener plate, serving as machine tool table top or for placement on such a table, is provided with an array of bores interconnected by open channels. The bores are connected to a low pressure suction device. Sealing strips are placed in selected channel portions to delineate a closed boundary. Bores outside of the boundary are selectively plugged, those within are not, so that an object covering that delineated area is sucked onto the fastener plate for holding and positioning.

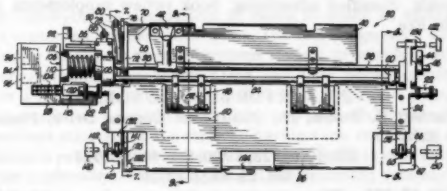


Additional bores are provided for indexing or bolting auxiliary holders and mounting elements to the plate. Examples for such mounting elements are in detail and provided to extend suction fastening to accomodate particularly contoured and/or oriented parts to be held.

3,711,083
NEWSPAPER INSERTING MACHINE

Ralph S. Cantrell, Sr., S 2 Route No. 1, Lake Lotawana, Mo.

Filed March 3, 1971, Ser. No. 120,632
Int. Cl. B65b *5/30*
U.S. Cl. 270—55 **16 Claims**



A newspaper edition is assembled by successively feeding folded inner sections into each of a series of open outer sections passing therebeneath in a continuously moving line of conveying buckets. Each bucket is provided with mechanism for grabbing the first section fed thereinto to prevent rebounding, a set of vacuum-operated suckers which part the folds of the section, and a pair of dividing fingers which move as a unit into the part between the section folds and thence away from one another to open the section in cooperation with the suckers. A special vacuum control system which utilizes the movement of the buckets to effect opening and closing of a series of vacuum ports alongside the path of travel of the buckets assures that uninterrupted vacuum pressure is supplied to the suckers of each bucket for a substantial period of time, and an ejector in each bucket discharges the edition when the sections thereof have been completely assembled. A misfeed system senses when the edition of any bucket fails to receive a section and activates the ejector of such bucket to discharge the incomplete edition at a special collection point.

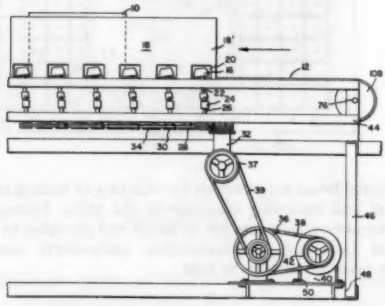
3,711,084
APPARATUS FOR SEPARATING A BUNDLE OF PLURAL SHEETS

Charles H. Hart, Nazareth, Pa., and George R. Cashau, Philipsburg, N.J., assignors to American Newspaper Publishers Association Research Institute, Incorporated, Easton, Pa.

Filed Oct. 27, 1970, Ser. No. 84,329
Int. Cl. B65h *5/30*
U.S. Cl. 270—57 **3 Claims**

Apparatus for separating a bundle of plural sheets of material such as a folded newspaper including an endless conveyor

advancing the bundle vertically within a lineal plane. A vertical baffle supporting the newspaper during advancing; a plurality of drive rollers extending through the baffle on either side of said conveyor, so as to engage the folded sides of said newspaper and urge the newspaper downwardly upon the conveyor, and a pointed probe longitudinally aligned with the conveyor at the discharge end of said vertical baffle, so as to



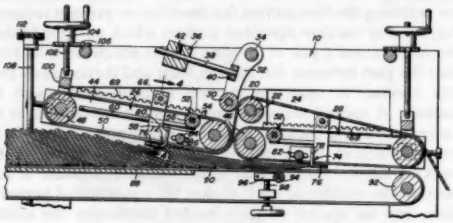
engage the leading edge of said bundle at the top and separate said sheets laterally from said vertical plane as they are advanced.

The apparatus is particularly adapted to separating a printed newspaper prior to stuffing with inserts such as a TV guide, classified advertising, book review supplements, and the like.

3,711,085
FOLDER FOR BUSINESS FORMS

Earnest R. Bunch, Jr., 3050 West Corrine Drive, Phoenix, Ariz.

Filed Aug. 28, 1970, Ser. No. 67,927
Int. Cl. B65h *45/20*
U.S. Cl. 270—79 **11 Claims**

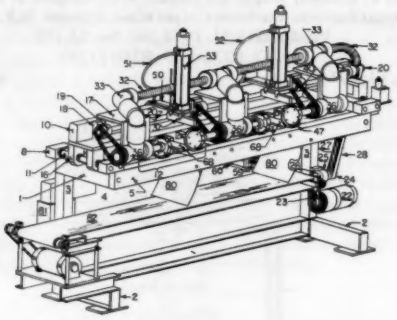


A machine for producing zigzag folds in continuous business forms or like strip material. The strip material moves over a horizontal feed roller and then downward between a pair of opposed endless belt units to an underlying support surface. A hold-down roller is biased to engage the feed roller, with the material sandwiched therebetween, immediately above the point at which the material discharges from the feed roller. The material, upon engagement with the support surface, loops alternately in opposite directions beneath the belt units and between spaced stops, one of which is rounded so as to allow for a smooth continuous movement of the folded material therebeyond. Material boosting means periodically engage the looped material immediately prior to engagement with the stops so as to insure a proper movement thereagainst.

3,711,086
METHOD AND APPARATUS FOR FOLDING LENGTHS OF MATERIAL

Herman C. Weist, 1860 Arlington Avenue, Louisville, Ky.

Filed Sept. 1, 1970, Ser. No. 68,631
Int. Cl. B65h *45/18*
U.S. Cl. 270—83 **18 Claims**

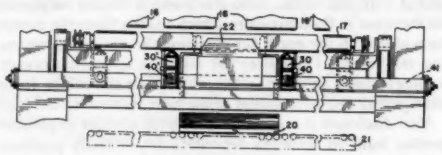


Lengths of material, such as plastic bags, fed from a bag forming machine are individually folded one or more times prepatory to packaging. Each length of material is wrapped around spaced and axially opposed vacuum pickup rollers to form a hollow cylindrical roll on said rollers. The roll is then bent in half by means of a blunt edge blade disposed with its longitudinal axis transversely related to the longitudinal axis of said hollow roll and the hollow roll is pushed in between two creasing rollers which bring both halves of the cylindrical roll together and squeeze each half into a flat creased folded portion.

3,711,087
SHEET PILING MACHINE

Velio S. Bucciconi, Gary, Ind., assignor to Bucciconi Engineering Co., Inc., Gary, Ind.

Filed Feb. 25, 1971, Ser. No. 118,649
Int. Cl. B65h *31/04*
U.S. Cl. 271—86 **9 Claims**



A machine for piling metal sheets having an upright supporting frame with elongate, overhead, rail-type conveyors extending between upright end frame members for advancing the sheets and releasing the same for piling on a hoist which is disposed between the end frame members and having guide assemblies engageable by the opposite side edges of the sheets, as they are dropped onto the pile, so as to bring the sheet edges into generally vertical alignment as they accumulate in a pile. The side guide assemblies include longitudinally extending, generally parallel face plates which are slidably mounted for limited vertical movement so as to avoid damage to the guide assemblies in the event the hoist is raised to too high an elevation so as to apply pressure to the bottom portions of the guide members.

3,711,088

DEVICE FOR ALIGNING SHEETS OF MATERIAL IN STACKS

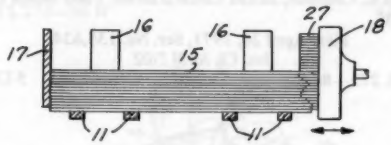
Gennaro Salvade, Vaud, Switzerland, assignor to J. Bobst & Fils S.A., Prilly, Switzerland

Filed Aug. 23, 1971, Ser. No. 173,768

Claims priority, application Switzerland, Sept. 23, 1970, 14101/70

Int. Cl. B65h *31/34*

U.S. Cl. 271—89 **10 Claims**



An aligning device for sheet material arranged in stacks and particularly for cardboard or corrugated cardboard sheets. The device is particularly designed to align such sheets against one or several abutments which may be placed on two adjacent sides of a package of sheets. Even though the sheets of the package have a general format which slightly varies from one sheet to the next, all of the sheets may be aligned individually against the abutments.

3,711,089

SKI TRAINING APPARATUS

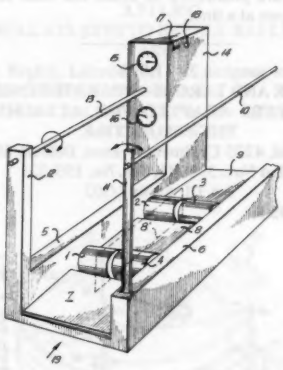
Paul Reinhard, 4917 Melchau, Switzerland

Filed Oct. 20, 1969, Ser. No. 867,711

Claims priority, application Switzerland, Nov. 13, 1968, 16902/68

Int. Cl. A63b *69/18*

U.S. Cl. 272—57 B **19 Claims**



A ski training device for simulating substantially all of the movements encountered during normal skiing, such as longitudinal, vertical and sidewards of tilting movements. Each ski is advantageously supported by at least one pair of spaced rollers, and the skis may rest either directly upon the rollers, or upon endless belts passing around and extending between the forward and rearward rollers of each pair. According to one embodiment of the invention longitudinal movement of the skis may be imparted by a crank arrangement which acts upon flexible pulley cords or belts to lengthwise shift the skis. A further embodiment of the invention contemplates vertical pivotal movement of each roller through the provision of a hydraulic cylinder drive arrangement which is operatively associated with lever members acting upon the rollers. A further embodiment of the invention and serving for producing irregular longitudinal and transverse tilting movement of the skis contemplates eccentrically mounting the rollers upon transverse axles, the forward and rearward rollers of each pair being counter rotated by means of a gear train, the rollers supporting one ski rotating faster than those supporting the other ski to thereby produce both longitudinal and tilting movement of the skis. The invention also teaches the possibility of not powering the rollers but having such mounted so as to be freely rotatable in response to forward and rearward movement of the skis. Weights or springs may be used for rotationally biasing the rollers to a rest position and providing resistance against rotation. Hydraluc cylinders or cam operated crank arms may also be provided for effecting vertical or pivotal movement of each roller relative to the others.

3,711,090

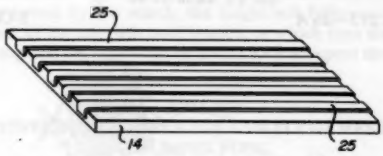
CONVEOR BELT AND SYSTEM HAVING LOW FRICTION CONTACT SURFACES

Vivian G. Fiedler, Chicago, Ill., assignor to Hans J. Fiedler and Richard M. Watanabe, Chicago, Ill., part interest to each

Filed June 8, 1970, Ser. No. 44,108

Int. Cl. A63b *23/06*

U.S. Cl. 272—69 **5 Claims**



A conveyor belt and system as shown in which an endless belt is secured between two rollers. The belt comprises a web member having an upper frictional surface to which a web liner is secured therebeneath, the web liner being selected from a material having a low coefficient of friction. A planar base member is provided beneath the web and web liner, and a base liner selected from a material having a low coefficient of friction is positioned atop the planar base. The base liner comprises a plurality of laterally spaced longitudinally extending strips positioned to provide a support surface for the web liner. A pair of end rollers are spaced at each end of the conveyor in proximate relationship to the base. The resultant conveyor belt and system provides for a smooth passage of parts for objects atop the frictional surface of the web in the absence of moving parts and required lubrication. One embodiment is shown where the conveyor belt and system is employed in a jogger.

3,711,091

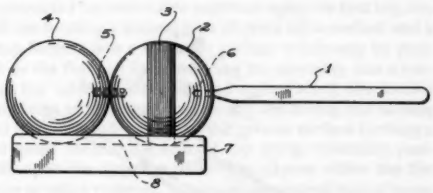
CUE BALL DIRECTION INDICATING APPARATUS FOR USE IN PLAYING POOL

James E. Dixon, 3876 East 143rd Street, Cleveland, Ohio

Filed Dec. 4, 1970, Ser. No. 95,258

Int. Cl. A63d *15/00*

U.S. Cl. 273—2 **6 Claims**



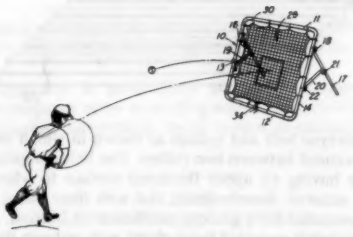
Movable indicating apparatus for use in playing pool including a pointer, a supporting device for the pointer, and a foundation member. The supporting device for the pointer

preferably includes an imitation playing ball to which an imitation cue ball is attached by a threaded wooden insert. To reduce the cost the imitation playing ball and the imitation cue ball may be formed of painted or varnished wood and are mounted on a wooden foundation material to which they are attached by an adhesive or a groove may be formed in the foundation material to keep the balls from rolling off. The indicating apparatus may be placed on the rail of a pool table with the indicator pointed toward the spot on the object ball which is to be struck by the regulation cue ball to drive the object ball into a designated pocket. The imitation cue ball which is attached to and bears diametrically against the imitation playing ball also creates in the mind of the player the spot on the regulation ball which is to be struck. Instead of placing the indicating apparatus on the rail of the pool table, it may be placed on the playing field with its pointer and cue ball indicating the spot on the object ball which must be struck to knock the object ball into a particular pocket.

3,711,092
BALL REBOUNDING MEANS

Charles J. Hogue, Piedmont, Ala., assignor to Whale Enterprises Inc., Piedmont, Ala.

Filed Feb. 23, 1971, Ser. No. 118,064
Int. Cl. A63b *69/40*
U.S. Cl. 273—26 A **5 Claims**

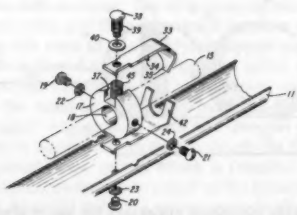


Apparatus for rebounding balls or similar objects brought into engagement therewith including a generally rectangular frame means having a net supported in tension within said frame means. A nylon cord adjusting means is interlaced within the net and connected to said frame means whereby the tension of said net can be varied by adjusting the length of the nylon cord.

3,711,093
SPRING-ACTUATED CUE

Louis Evans, Route 3, Highway M-140, P.O. Box 38, South Haven, Mich.

Filed Dec. 8, 1971, Ser. No. 205,945
Int. Cl. A63d *15/08*
U.S. Cl. 273—69 **6 Claims**

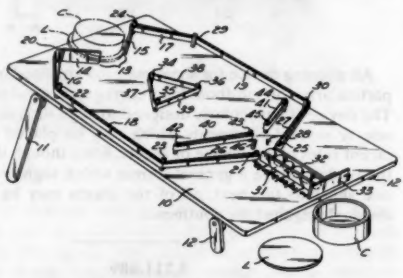


A spring-actuated cue for billiards, pool, and the like, having an infinitely adjustable stroke force comprises a hollow, tubular stock, a spring-actuated stick member slidably disposed within the tubular stock, and a trigger means comprising a trigger body member having a central bore for slidably receiving the stick member and a grip means movably mounted on the trigger body member for frictionally and releasably engaging the stick member around the periphery thereof at at least two locations situated more than $\pi/2$ radians apart.

3,711,094
ROLLING BALL GAME APPARATUS

Gordon E. Coffman, 20531 Circle S Drive, Palm Beach County, Fla.

Filed April 20, 1971, Ser. No. 135,624
Int. Cl. A63f *7/02*
U.S. Cl. 273—86 C **5 Claims**

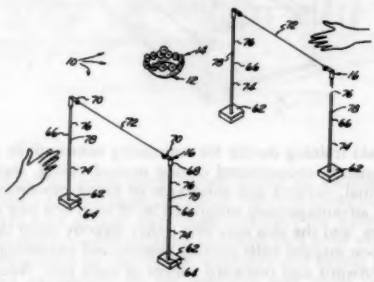


An inclined game board having a start opening near its upper end which is wide enough to pass several game balls at a time, a finish opening near its lower end which passes only one game ball at a time, and rubber band deflectors positioned between the start and finish openings to deflect the game balls for a random order finish. One or more deflectors near the finish opening are positioned to cause the balls to enter the finish opening one at a time.

3,711,095
PROJECTILE AND TARGET APPARATUS INCLUDING SCORING PIECES ADAPTED FOR ATTACHMENT TO THE PROJECTILE

William B. Todd, 4225 Chalmers Avenue, Detroit, Mich.

Filed Nov. 3, 1971, Ser. No. 195,221
Int. Cl. A63b *71/02*
U.S. Cl. 273—95 R **10 Claims**



A game set including a tossing bowl, scoring chips, and a pair of goals. The scoring chips consist of a pair of small discs spaced apart from one another and joined by a central connector at a spacing sufficient to enable them to be releasably clipped onto the rim of the tossing bowl with a yielding frictional grip. The players stand behind the goals and toss the bowl over both goals, whereupon an opponent attempts to catch the bowl and toss it back. Upon a successful catch or

throw an additional chip is attached and the tossing is continued with additional taken care not to dislodge the attached chip.

3,711,096
PROJECTING AND CATCHING APPARATUS AND PROJECTILE FOR USE THEREWITH

Benjamin Cramp, Havering-Atte-Bower, and Thomas Bowen-Edwards, London, both of England, assignors to Bentos Products Limited, Copford, Colchester, Essex, England

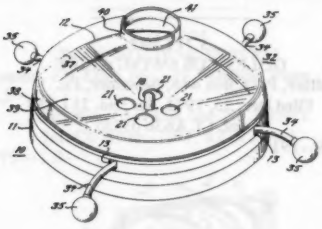
Filed Feb. 23, 1971, Ser. No. 118,189
Int. Cl. A63b 71/02
U.S. Cl. 273—96 R **4 Claims**

The specification describes apparatus for playing a game of skill. The apparatus comprises a playing piece and a hand-held ejector device comprising a pair of arms which have facing divergent tracks whereby the playing piece is upwardly ejected by cam action when the ejector device is closed onto the playing piece by the player. The playing piece is designed to be caught by the ejector device and again upwardly ejected and so on repeatedly according to the player's skill.

3,711,097
INDIVIDUAL AIR JETS TO IMPELL BALLS TOWARD A TARGET

Thomas J. Begley, Lansdowne, Pa., assignor to Reed Toys Incorporated, West Conshohocken, Pa.

Filed Jan. 26, 1971, Ser. No. 109,789
Int. Cl. A63b 71/02
U.S. Cl. 273—101 **6 Claims**

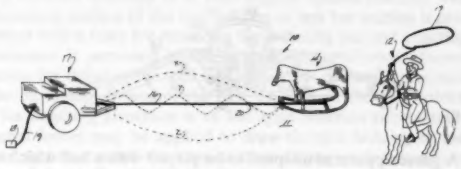


A game is provided which has a circular base with a floor supported thereby, the floor having a frusto-conical portion for impelling balls toward seating openings around a center post. A transparent cover is provided with a central discharge opening above the center post for discharge of balls therethrough. Air jets from exteriorly accessible flexible bulbs discharging through the seating openings are available for impelling the balls toward the discharge openings. The balls are introduced into the space between the cover and the floor so that they arrive at the seating openings in a chance arrangement.

3,711,098
PORTABLE, MECHANICAL LASSO TRAINING APPARATUS

Kenneth J. McCord, R.F.D. No. 1, Gretna, Nebr.

Filed May 10, 1971, Ser. No. 141,474
Int. Cl. F41j 9/02
U.S. Cl. 273—105.2 **19 Claims**

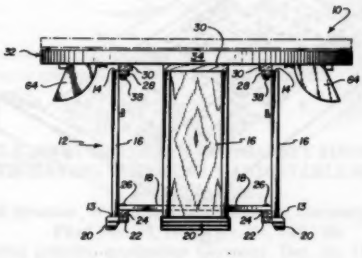


A portable, mechanical apparatus which simulates a running calf for roping purposes and comprises an electrical motor driven winch, having a cable connected to a target sled, the target having a calf-like superstructure, ground engaging elements, and a guidance and release system wherein, upon being towed by the winch, the target will follow a straight, curved, or zig-zag path until lassoed, at which time the winch will stop and the target can be towed back to repeat the cycle.

3,711,099
CONVERTIBLE TABLE FOR UTILITY GAMES AND BUMPER POOL

Ernest Milu, Hollywood, Fla., assignor to A.T.J. Recreation Inc., Miami Lakes, Fla.

Continuation-in-part of Ser. No. 65,196, Aug. 19, 1970. This application Nov. 3, 1971, Ser. No. 195,098The portion of the term of this patent subsequent to May 2, 1986, has been disclaimed.
Int. Cl. A63d 15/04
U.S. Cl. 273—123 R **15 Claims**



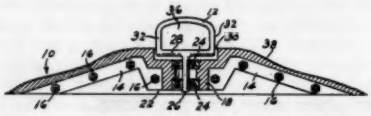
There is disclosed a combination flat top and game table assembly, the combination including a leg support for supporting the table arrangement, the first top secured to the leg support and forming a first type of game table surface a second top constructed for removable seatment upon the first top, the second top forming a second type of game table surface and a third top formed into a flat table surface which may be positioned on the first top for converting the assembly into a normal flat top table. In the preferred embodiment, the second and third tops are formed from a single top having one surface formed into a flat table top, and the reverse surface forming a second game means, the second top being reversibly positionable upon the first top thereby to expose either the flat table top or when reversed, to expose the second type of game table surface. Included in the game table assembly are removably positionable ball collection compartments which are positioned directly under pockets in the first game table surface when the assembly is to be used as a pool table.

3,711,100

SURFACE PROJECTILE TARGET HAVING A CENTRAL GOAL LOOP

William E. Crowder, R.D. No. 1, Mt. Wolfe, Pa.

Filed Oct. 18, 1971, Ser. No. 190,048
Int. Cl. A63b 71/04
U.S. Cl. 273—127 R 9 Claims



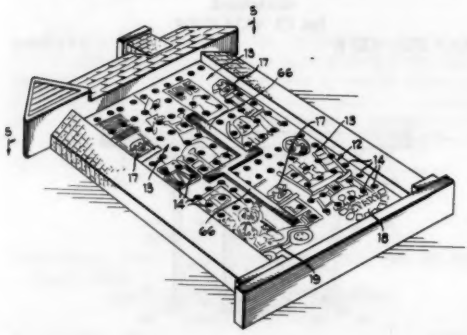
A game apparatus adapted to be played with a ball which is bowled toward a goal device adapted for either indoor or outdoor use and which resembles a circular mound having gradually rising sides terminating in a central goal loop member which extends vertically from a shaft pivotally mounted for rotation about said shaft when struck by the ball incident to a player trying to bowl the ball through the loop from adjacent the perimeter of the goal device. The upper surface of the goal device is provided with a contour which permits a ball to be directed in a curved path, if desired, toward the goal loop.

3,711,101

BOARD GAME APPARATUS

Jeffery D. Breslow, Chicago, Ill.; Burton C. Meyer, Chicago, Ill., and Marvin I. Glass, Chicago, Ill., assignors to Marvin Glass and Associates

Filed Feb. 8, 1971, Ser. No. 113,207
Int. Cl. A63f 3/00
U.S. Cl. 273—131 AD 2 Claims



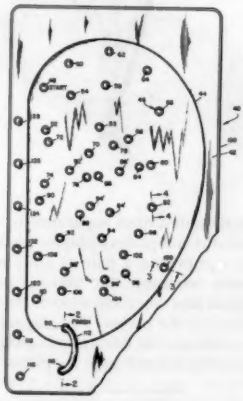
An amusement device wherein a generally flat base is provided defining a playing area having a plurality of playing positions arranged in a desired pattern and over which playing pieces are manipulated arbitrarily from position to position. The base preferably has the configuration of a house with rooms defined thereon and with the playing positions arranged over the rooms so that a player attempts to proceed from room to room through the house. A mechanism is provided which will produce a ringing sound in response to a playing piece being placed at certain conditioned ones of the playing positions. Those playing positions which will effect the ringing sound in response to the playing piece being placed thereon are randomly conditioned and preferably unknown to the players of the game. A simulated phone is defined in each room whereby a player who has effected the ringing sound by placing his playing piece in a room must move to the phone to stop the ringing sound, either losing or gaining ground in his attempt to proceed through the house. A sub-base is provided below the base and the top of the sub-base and the underside of the base are provided with electrically conductive material. Freely movable disc-like contact members which effect said random conditioning are held between the base and sub-base and complete a circuit when attracted by a magnet contained in a playing piece. The areas between the base and sub-base are partitioned into sub-areas generally corresponding to the rooms defined on the base. Different playing positions in each of the rooms defined on the base may be activated by shaking the amusement device to position the contacts below different playing positions.

3,711,102

PROGRESSIVE RING-THREADING PUZZLE

Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner Bros. Inc., East Paterson, N.J.

Filed Oct. 30, 1970, Ser. No. 85,450
Int. Cl. A63f 9/08
U.S. Cl. 273—153 R 3 Claims



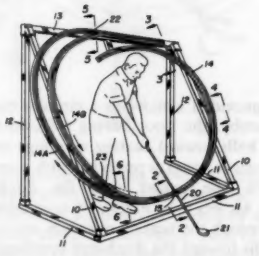
A maze puzzle comprising a panel provided with a large number of like holes. The holes are arranged in such a manner that for at least a specific group of a substantial number of holes, there is a uniform center-to-center spacing from hole to hole in a predetermined progression from a starting hole to a finish hole through which a ring having a gap is threaded through any two successive holes in the progression. Optionally, a group of further holes may lead from the finish hole back to the starting hole and at least one further group of holes may be included to provide a false path.

3,711,103

GOLF CLUB SWING GUIDE

Ralph D. Seltzer, P. O. Box 448, Bessemer, Pa.

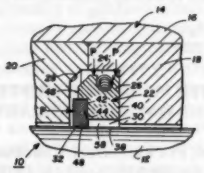
Filed Dec. 23, 1971, Ser. No. 211,358
Int. Cl. A63b 69/36
U.S. Cl. 273—191 A 6 Claims



A golf club swing guide includes track members for guiding the golf club through a grooved swing. The track members in-

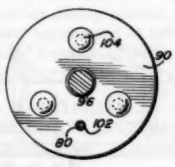
cludes first and second arcuate track members mounted on a support adjustable in inclination to conform to the swing planes of the golf swing and a given length of golf club. One of the arcuate track members defines the backswing of the golf club and the second track member defines the power swing of the golf club. The arcuate track members join one another adjacent their upper and lower ends respectively and spring-biased switches are provided to insure the direction of the golf club and more particularly the guide thereon engaging the track members into the proper backswing and power swing tracks.

3,711,104
SEAL ASSEMBLY
Ralph E. Henry, Rixford, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed March 16, 1971, Ser. No. 124,896
Int. Cl. F16j 15/00
U.S. Cl. 277—58 12 Claims



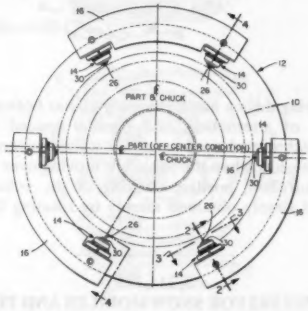
The annular seal assembly and seal arrangements including the seal assembly disclosed are useful in high pressure pumps and compressors and the like that include a cylinder having annular grooves therein for receiving the seal arrangements and having a plunger reciprocating in the cylinder through the seal arrangements. The seal assembly includes segmented tangent and radial ring assemblies. Each of the segments in the tangent ring assembly includes tangentially disposed end surfaces that are arranged to sealingly and slidingly engage the adjacent tangentially disposed end surfaces. The radial ring assembly is constructed from a plurality of arcuate segments having an outer periphery sized to be closely fitted into a counterbore formed in one face of the tangent ring assembly. With the radial and tangential rings assembled, the forces exerted by the high pressure fluid on the tangent ring assembly are transferred to the radial ring assembly, providing better lubrication and longer seal life. The disclosed seal arrangements promote better operation and better seal life due to the distribution of the pressure load over several seals.

3,711,105
TOOL HOLDING SYSTEM
Lars Johanson, c/o Eltee Inc., 19 Fairfield Place, West Caldwell, N.J.
Filed Nov. 12, 1970, Ser. No. 88,851
Int. Cl. B23b 31/02; B23k 37/00
U.S. Cl. 279—1 R 12 Claims



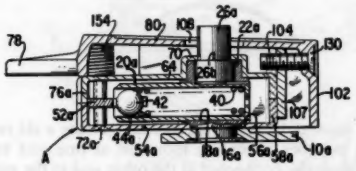
A tool holder primarily designed for use in conjunction with EDM machines and also capable of functioning in conjunction with other machines where repeated tool positioning is desired. The tool holder includes a base portion for semi-permanent securement to the associated machine and includes a tool mounting surface having spherical projections disposed at the apices of an equilateral triangular area on the mounting surface. An indexing pin also projects outwardly of the mounting surface and a tool holding or test bar section is provided including a mounting surface in which three recesses are formed at the apices of an equilateral triangular zone of the same size as the first-mentioned zone, the projections being seatingly receivable in the recesses with the opposing mounting surfaces disposed in at least slightly spaced relation. The mounting surface of the tool holding or test bar section is provided with a bore for receiving the indexing pin and coacting structure is provided in the centers of the aforementioned zones for drawing the tool holding or test bar section toward the mounting surface of the base or body of the tool holder. This coacting structure is of the type wherein substantially equal forces may be applied to draw the tool holding or test bar section toward the base section during each instance of use of the tool holder.

3,711,106
CENTERING DEVICE FOR A CHUCK
Patrick J. Hogan, and Philip Boulash, both of Philadelphia, Pa., assignors to The Budd Company, Philadelphia, Pa.
Filed Sept. 3, 1971, Ser. No. 177,747
Int. Cl. B23b 31/16
U.S. Cl. 279—123 4 Claims



A centering device for proper centering of a workpiece before being gripped by the chuck jaws or grippers.

3,711,107
SINGLE-JOINT FRONT JAW OF A SAFETY BINDING FOR SKIS HAVING VERTICALLY ADJUSTABLE HOLD-DOWN ARMS
Rudolf Brunner, Wankstrasse 23, Baldham, Germany
Filed Dec. 30, 1970, Ser. No. 102,786
Claims priority, application Germany, Dec. 30, 1969, P 19 65 409.2
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 19 Claims



A front jaw of a ski binding has a central face to support the front edge of a boot sole and hold-down arms which engage over the sole at both sides of the boot toe and are supported by a movable cover on a jaw body that is swingable laterally, relative to a mounting plate fixed to the ski, against the force of resilient holding means enclosed and protected within the jaw

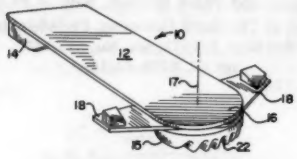
body and cover. According to one feature, the cover is adjustable vertically relative to the jaw body to adapt the location of the hold-down arms to the thickness of the boot sole. According to another feature the cover is releasibly biased downward so that the boot sole can be freed safely from the hold-down arms by movement against the force applied through the cover.

3,711,108

DEVICE FOR STEERING A VEHICLE OVER A FLUID OR SEMI-FLUID SURFACE

Enrique H. Orozco, 670 Irving Park, Chicago, Ill.; Brian L. Asimor, 2909 Vinan Drive, Melrose Park, Ill., and Edward C. Sylvester, Elmhust, Ill., assignors to said Orozco and Asimor, by said Sylvester

Filed April 15, 1971, Ser. No. 134,274
Int. Cl. B62b *17/02*
U.S. Cl. 280—21 R **8 Claims**



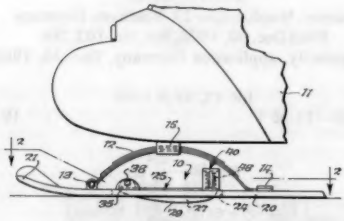
The steering device has a generally planar bottom side with a plurality of alternating, and parallel spaced ridges and grooves which are adapted to engage a fluid or semi-fluid surface such as snow when the vehicle is moving over the surface so that controlled, positive steering of the vehicle can be quickly and simply obtained merely by rotating the steering device.

3,711,109

STEERING SKI FOR SNOWMOBILES AND THE LIKE

Leo Hofbauer, Mounted Route No.8, P. O. Box 387, Plattsburgh, N.Y.

Filed Feb. 8, 1971, Ser. No. 113,154
Int. Cl. B62b *17/02*
U.S. Cl. 280—28 **9 Claims**



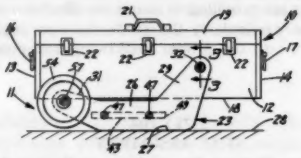
A ski for snowmobiles and the like comprising a ski runner and a keel member resiliently mounted at one end to the runner and pivotally connected at the other end to the runner. In the illustrated construction, parallel longitudinally extending slots are provided in the runner, and the keel member is channel-shaped to provide spaced-apart depending blades which are vertically movable within the slots. The blade edges normally are below the under surface of the runner, and the blades are moved vertically to place the blade edges flush with the runner under surface when an obstruction is encountered.

3,711,110

TRUCK FOR TOOL BOX

John R. Logerquist, 2088 Fry Street, St. Paul, Minn.

Filed Feb. 18, 1971, Ser. No. 116,540
Int. Cl. B62d *21/18*
U.S. Cl. 280—43.24 **6 Claims**



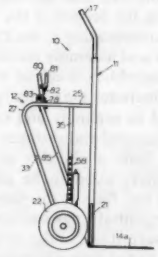
A two-wheel truck movably mounted on a tool box to selectively support the tool box on a supporting surface and facilitate movement of the tool box over the surface. The truck has side frame members pivotally connected to the sides of the box. Wheels are rotatably mounted on the lower end of the frame members.

3,711,111

HAND TRUCK WITH MEANS FOR SHIFTING CENTER OF GRAVITY AND HAVING AUXILIARY ROLLER SUPPORT

Burdette B. Crawford, 511 Elm Street, Chadbourn, N.C.

Division of Ser. No. 29,028, April 16, 1970, Pat. No. 3,642,301. This application Dec. 27, 1971, Ser. No. 212,226
Int. Cl. B62b *1/02*
U.S. Cl. 280—47.22 **1 Claim**



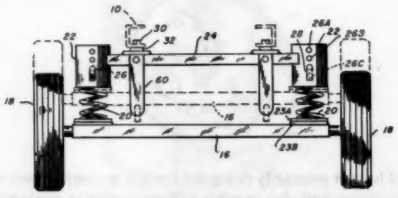
A two-wheel, tilt type hand truck incorporating a spring loaded, vertically shiftable axle and auxiliary rollers and is adapted to handle a loaded pallet from floor position, shift the load center of gravity for transport of the load and return the load to its original position for removal of the loaded pallet.

3,711,112

HELPER AXLE ASSEMBLY FOR VEHICLES

George W. Puckett, Tulsa, Okla., assignor to Tag-Along Corporation, Tulsa, Okla.

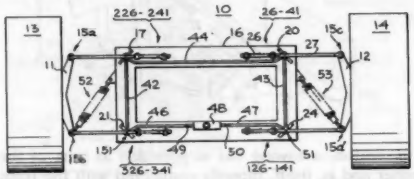
Filed Aug. 13, 1970, Ser. No. 63,367
Int. Cl. B60g *11/14*
U.S. Cl. 280—81 R **5 Claims**



A helper axle is attached to a vehicle rearwardly of the rear axle thereof and serves to level the vehicle when loaded to maintain proper front wheel castor. When the vehicle is emp-

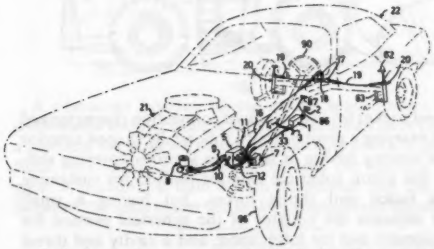
ty, the helper axle can be raised upwardly into an inoperative position.

3,711,113
VEHICLE SUSPENSION ARRANGEMENT
John C. Stammreich, 5521 Paraguay Drive, Buena Park, Calif.
Filed Sept. 9, 1970, Ser. No. 70,654
Int. Cl. B62d *7/06*
U.S. Cl. 280—96.2 R **36 Claims**



A suspension system for a vehicle comprised of a guide plate having a plurality of guideways and a plurality of linkage arrangements pivotally mounted through such guideways and to such guide plate for allowing various pivot points of such linkage arrangements to rotate and travel relative to such guideways to control the camber of the tires of such vehicle during the vertical deflection of such tires and the roll of such vehicle. Either an open loop or a closed loop control circuit may be connected to the suspension system to provide for automatic control of the suspension system during roll.

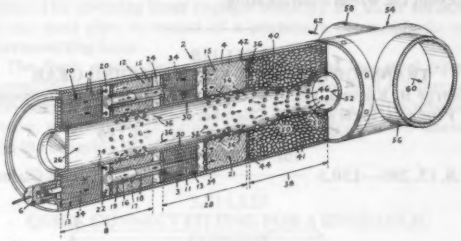
3,711,114
POWER STABILIZER AND METHOD
Jack F. Joysten, San Ramon, Calif., assignor to Gerhard W. Stiefrater, Chico, Calif.
Division of Ser. No. 36,136, May 11, 1970, Pat. No. 3,625,301.
This application Sept. 30, 1971, Ser. No. 185,098
Int. Cl. B60g *21/10*
U.S. Cl. 280—124 F **5 Claims**



A device to be connected in the hydraulic system in a conventional vehicle that includes a body-supporting chassis sprung on wheel-mounted running gear, which device includes relatively movable elements connecting the chassis and running gear adjacent to each of the ground wheels automatically hydraulically actuatable for restricting unsafe movements of the chassis and body relative to the running gear during either straight away movement of the vehicle over the ground, or around curves during normal or abnormal operation of the vehicle and application of the brakes, and which device also performs the function of shock absorbers.

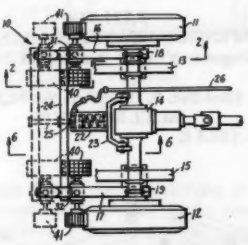
3,711,115
PYROTECHNIC GAS GENERATOR
Thomas E. Lohr, Warren, Mich., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Nov. 24, 1970, Ser. No. 92,368
Int. Cl. B60r *21/08*; **B01j** *7/00*
U.S. Cl. 280—150 AB **20 Claims**

A gas generation method and apparatus for use in inflation of vehicle gas bags. A purely pyrotechnic gas generator is provided for inflation of vehicle gas bags in which the sequential ignition of two or more combustion stages provides combustion gases which are directed to a conduit disposed within



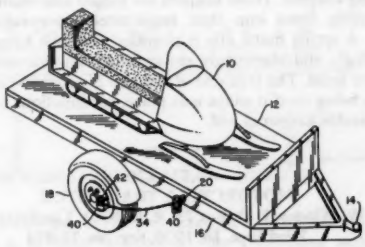
the generator. A compartment disposed in the generator to remove water contributes additional gas in the form of water vapor to the conduit. A gas bag, in communication with the conduit, is inflated by the gas generated during combustion.

3,711,116
ANTI-SKID ATTACHMENT FOR AUTOMOBILES
Edward G. Campbell, 630 Dianne Drive, Melbourne, Fla.
Filed July 27, 1971, Ser. No. 166,403
Int. Cl. B60r *27/00*
U.S. Cl. 280—150 C **5 Claims**



An anti-skid attachment for automobiles in which a ground engaging anti-skid wheel is driven through a gear box from a power engaging wheel with the anti-skid attachment being movable into and out of operation by a hydraulically actuated cylinder. The anti-skid attachment may be attached and detached by hand without the use of tools.

3,711,117
VEHICLE SECURITY SYSTEM
Bruce W. Penner, 28362 Campbell, and Kenneth W. Platt, 30040 Schoenherr, both of Warren, Mich.
Filed Aug. 16, 1971, Ser. No. 171,851
Int. Cl. B60r *27/00*
U.S. Cl. 280—150 R **3 Claims**



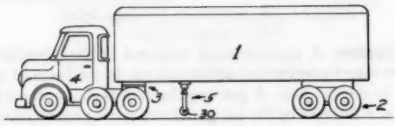
A vehicle security system for preventing the unauthorized moving of a vehicle such as a trailer. At least one of the wheels of the trailer is prevented from being rotated by being secured

to the frame of the trailer by means of a flexible member such as a chain. One end of the chain is locked through a special nut on one of the wheel lugs and is locked to an eye bolt affixed to the frame. The length of the chain is such so as to prevent the wheel from rotating.

3,711,118
TRANSPORTATION TRAILER LANDING GEAR

George B. Kirwan, Huntington, W. Va., assignor to Hennessy Products, Incorporated, Chambersburg, Pa.

Filed Dec. 4, 1970, Ser. No. 95,159
Int. Cl. B60s *9/02*
U.S. Cl. 280—150.5 **5 Claims**

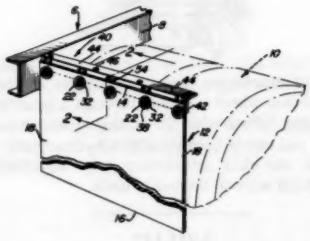


Trailer vehicle and landing gear support structure therefor providing for the lateral yielding of the lower end of an upright support when its lower end engages an obstacle on the ground as the trailer is being moved about and preferably preventing such lateral yielding when the landing gear is functioning to support the trailer.

3,711,119
SUSPENSION MEANS FOR MUD FLAPS

Alan L. Hollingsworth, 3008 Bennington Drive, Springfield, Ill.

Filed Dec. 9, 1970, Ser. No. 96,534
Int. Cl. B62d *25/16*
U.S. Cl. 280—154.5 R **3 Claims**



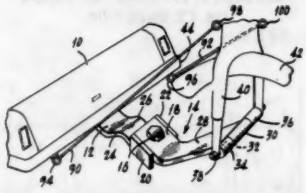
A safety-type intercepting and anti-splashing mud flap for use in conjunction with the rearward tread surfaces of dual tractor-trailer wheels and which is unique in that the upper edge is provided with specially designed hanger bolts, more particularly, bolts whose convex headed ends provide attaching keepers. These keepers are lodged and retentively but releasably fitted into their respectively cooperable keeper slots. A spring metal clip is provided for each keeper and is yieldingly and clampingly engageable with the coordinating keeper head. The free end of the clip is concavo-convex and when being used it snaps into place but functions to free the cooperable keeper at will.

3,711,120
MOTORCYCLE TRAIL HITCH

Jesse W. Winder, P. O. Box 75, R. D. No. 1, Lambertville, N.J.

Filed Sept. 10, 1970, Ser. No. 71,074
Int. Cl. B62d *53/04*
U.S. Cl. 280—292 **9 Claims**

A towing device for a motorcycle, or the like, having a mounting member adapted to be fixedly secured to a conventional hitch tongue of an automobile. An arm extends outwardly and upwardly from the mounting member and is adapted for connection with a front fork portion of a cycle to be towed. In one embodiment of the invention, the front axle of the cycle is used as the point of connection between the towing device and the motorcycle. In another embodiment of

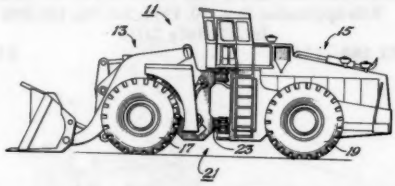


the invention, a towing bar is provided as part of the arm member and is, itself, directly connected with the front fork portion of the motorcycle in the place of the axle. In another independent feature of the invention, the mounting member may be provided with adjustable guide means for securing the mounting means against lateral slippage with respect to the hitch tongue.

3,711,121
ADJUSTABLE SELF-ALIGNING PIVOT BEARING, AND PIN AND SOCKET EMPLOYING SAME

Lloyd A. Molby, Longview, Tex., assignor to R. G. LeTeurneau Inc., Longview, Tex.

Filed Dec. 3, 1970, Ser. No. 94,684
Int. Cl. B62d *53/02*
U.S. Cl. 280—400 **11 Claims**



A pin and socket for use in a pivot connection characterized by a shaft carrying a pivot having a spherically shaped exterior portion; a bearing having at least two sections covering substantially the entire spherical exterior portion for sustaining maximum radial and thrust forces, but having a small clearance adjacent the equator of the spherical portion for wear adjustment and for lubrication; and a cavity and thrust plate means for retaining the bearing sections fittingly engaging the spherical exterior portion of the pivot. With the disclosed structure, misalignment is prevented and the pin and socket easily and precisely adjusted for wear.

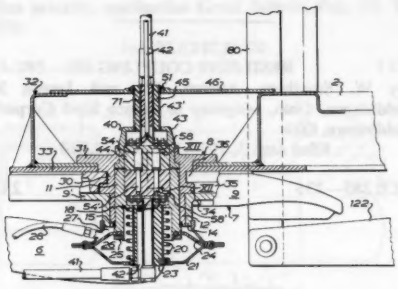
3,711,122
COUPLING MECHANISMS FOR TRACTOR SEMI-TRAILER VEHICLE COMBINATIONS HAVING CONNECTING MEANS FOR THE ELECTRICAL, PNEUMATICAL HYDRAULICAL SERVICE LINES FROM THE TRACTORS TO THE SEMI-TRAILERS

Roland Bengt Holmberg, 381 00 Kalmar, and Ralf Krister Ebbe Petersson, 380 44 Alsterbro, both of Sweden, assignors to Kalmar Verkstadsaktiebolag, Kalmar, Sweden

Filed Aug. 12, 1970, Ser. No. 63,175
Claims priority, application Sweden, Aug. 13, 1969, 11245/69
Int. Cl. B60d *1/08*
U.S. Cl. 280—421 **11 Claims**

A coupling mechanism for a tractor semi-trailer vehicle combination comprises a fifth wheel mechanism supported on

the tractor and king pin means supported on the semi-trailer, and the fifth wheel mechanism comprises a locking bolt and the king pin means is arranged to be engaged by the locking bolt for securing the coupling therebetween in such a way that



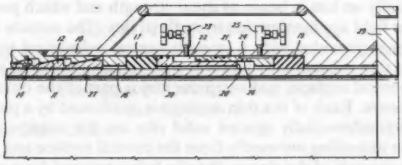
pneumatical and electrical connector members housed in the locking bolt and in the hollow king pin means after connection are held together without undue rotational movements between the parts.

3,711,123

APPARATUS FOR PRESSURE TESTING ANNULAR SEALS IN AN OVERSLIDING CONNECTOR

James F. Arnold, Baytown, Tex., assignor to HydroTech Services, Inc., Houston, Tex.

Filed Jan. 15, 1971, Ser. No. 106,856
Int. Cl. F16l *35/00*
U.S. Cl. 285—18 **1 Claim**



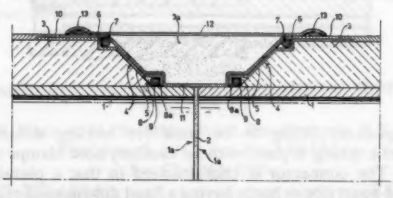
A connector housing having axially spaced apart radially deformable annular seals is slidably positioned over the end of a pipe and the seals are actuated by an hydraulically generated force into sealing engagement between the housing and the pipe. A pressurized fluid is then introduced into the housing between the seals to test the sealing engagement thereof.

3,711,124

CONNECTIONS FOR INSULATED PIPES

Willem Gerholt, Hardenberg, and Gerrit Heidemann, Oldenzaal, both of Netherlands, assignors to Industriele Onderneming Wavin N.V., Zwolle, Netherlands

Filed April 30, 1970, Ser. No. 33,227
Claims priority, application Netherlands, Feb. 12, 1970, 7002034
Int. Cl. F16l *11/12*
U.S. Cl. 285—47 **2 Claims**



The invention relates to a connection of steel pipes, with an external continuous polyurethane foam layer and a fiber reinforced polyester or epoxy resin, or polyethylene tape covering layer. The polyethylene covering layer is obtained by wrapping polyethylene tape of 170°C around the foam plastic, whereby overlapping parts are completely heat sealed to each other. The covering layer engages sealingly the outer surface of the steel pipe by means of a protective thermoplastic or thermosetting layer.

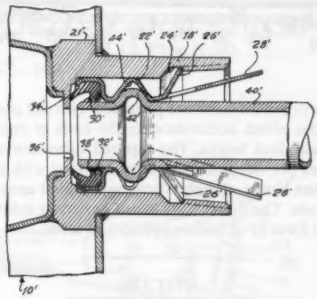
The foam plastic between the ends of the two steel pipes connected by welding is covered with a glass fiber reinforced polyester or epoxy resin layer or covered with a thermoplastic sleeve, whereby rubber rings are present between the sleeve and the covering layer.

3,711,125

QUICK CONNECT FITTING FOR A HYDRAULIC CONDUIT

David C. Dehar, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 29, 1971, Ser. No. 157,921
Int. Cl. F16l *17/00*
U.S. Cl. 285—111 **4 Claims**



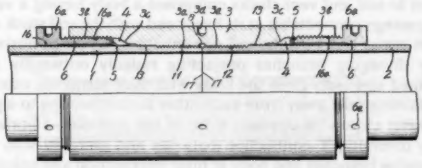
A quick connect fitting for establishing a connection between a pressurized fluid conduit and a communicating fluid passage comprising a sleeve, a collar surrounding the sleeve, said sleeve encircling one end of said conduit and providing a seal retaining groove, said collar and said sleeve having interlocking parts whereby said collar and said tube end may be held in place as said seal is urged into engagement with a cooperating sealing surface in said collar.

3,711,126

COUPLING FOR MILLI-WAVE GUIDING TUBE

Atsushi Hara; Hisao Naganuma, and Akio Takai, all of Kawasakishi, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

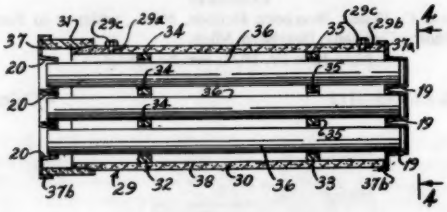
Filed Nov. 23, 1970, Ser. No. 91,791
Claims priority, application Japan, Nov. 24, 1969, 44/93648
Int. Cl. F16l *19/00*
U.S. Cl. 285—116 **1 Claim**



The invention relates to a coupling for milli-wave guiding tube, and is to form respectively the connecting surfaces between the wave guiding tube screwed on the coupling sleeve and this coupling sleeve, as well as form the respective connecting surfaces between the said wave guiding tube and the junk ring screwed on the both ends of this coupling sleeve and

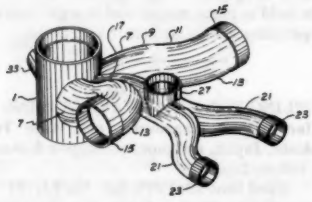
furnished with the packing to serve as sealing between the outer surface of the wave guiding tube and the inner surface of the connecting sleeve, thereby obtaining not only a suitable connecting strength and the complete airtightness of the respective connected milli-wave guiding tubes but also the high precision of alignment in order to provide a high working efficiencies.

3,711,127
DUCT BANK WITH COUPLING
Angelo M. Raffa, 886 White Plains Road, Scarsdale, N.Y.
Filed July 8, 1971, Ser. No. 160,751
Int. Cl. F16l *39/00*
U.S. Cl. 285—137 R **1 Claim**



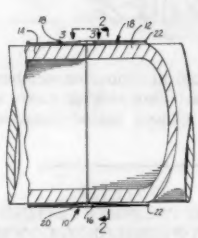
The ends of a duct bank are provided with flat plates having tapered tubes which accommodate the ends of ducts projecting from said duct banks. The tapered tubes are nestable in similar tubes provided on flat plates engaged with the ends of adjacent duct banks, thereby forming a sealed connection for said duct ends. The duct banks are of generally solid or hollow rectangular form or of hollow cylindrical form.

3,711,128
PLUMBING FITTINGS
William J. Hezel, 935 Popular Dr., St. Louis, Mo., and Robert J. Neubert, 4709 Candace Dr., St. Louis, Mo.
Filed Oct. 8, 1970, Ser. No. 79,057
Int. Cl. F16l *41/00*
U.S. Cl. 285—153 **12 Claims**



A unitary plumbing fitting for connecting a pair of bathrooms disposed symmetrically on opposite sides of a partition to soil and vent stacks comprises a body having a vertical passage connectable at its lower end with the soil stack and at its upper end with the soil or vent stack, a pair of horizontally diverging branches projecting radially outwardly and inclined upwardly from the body with their terminals extending horizontally away from each other for connecting to a pair of water closets on opposite sides of the partition, a horizontally diverging Y-connection between and merging with the diverging branches and body at their intersection and being initially similarly upwardly inclined from said body with the outer end of its stem and its arms substantially horizontal at a lower level than the terminals of the diverging branches for connection to a pair of bathtub drains on opposite sides of the partition, a vertical branch on the outer horizontal portion of the Y-connection stem connectable to a vent stack passing between the arms of the Y-connection, and an additional branch projecting from the body in a diametrically opposite direction from the Y-connection, at the same level and similarly upwardly inclined for connection to a pair of wash basin drains on opposite sides of the partition and to the vent stack.

3,711,129
RESILIENT COUPLING
Harry W. Smathers, Aurora, Ill., and Joseph Moffa, Middletown, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio
Filed Aug. 3, 1970, Ser. No. 60,248
Int. Cl. F16l *21/00*
U.S. Cl. 285—235 **2 Claims**



A resilient coupling for encircling the adjacent ends of substantially axially aligned, abutting, smooth wall pipe sections, comprising a synthetic resin, injection molded, sleeve which offers substantial reduction in weight and material with substantially no loss in beam or shear strength and which provides easier field application due to its flexibility. The outside of the sleeve is provided with a smooth central cylindrical surface, and a thin substantially uniform wall section, on either side of the central surface, makes up the major part of the outside of the sleeve. Each of the thin sections is reinforced by a plurality of circumferentially spaced solid ribs on the outside of the sleeve extending outwardly from the central surface and parallel to the axis of the sleeve, the ribs being tapered from a maximum height adjacent the ends of the central surface to a point closely adjacent each end of the sleeve where they intersect the surface of the uniform sections.

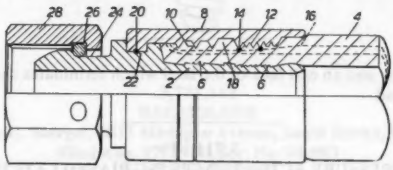
3,711,130
FERRULELESS BARBED TUBING CONNECTOR
Mark H. Betzler, Wilkes Barre, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Nov. 9, 1970, Ser. No. 87,705
Int. Cl. F16l *33/00*
U.S. Cl. 285—239 **1 Claim**

A push-on fitting to be used for holding deformable synthetic tubing in place without auxiliary hose clamps or ferrules. The connector is characterized in that a plurality of spaced-apart ribs or barbs having a fixed dimensional relationship to the tubing are the operative means for securing the tubing to the connector.

3,711,131
HOSE END COUPLINGS

Harry James Evans, London, England, assignor to Flextube Limited, London, England

Filed Feb. 17, 1971, Ser. No. 116,004
Claims priority, application Great Britain, Feb. 25, 1970, 9,150/70
Int. Cl. F16l 33/00
U.S. Cl. 285—256 1 Claim

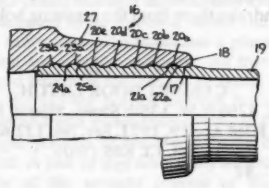


A hose end coupling of the kind comprising a tubular nipple or insert piece which is forced into the interior of the hose and is formed with exterior circumferential ribs to grip the interior wall of the hose and an internally circumferentially ribbed ferrule which is swaged over the tube to compress the hose wall between the ferrule and the insert, an inwardly extending lip on the ferrule engaging in a groove in the insert beyond the end of the hose. Wherein the ribs of the ferrule are in two sets separated by a groove which is wider and deeper than the space between any pair of adjacent ribs, the ribs of the set nearer the outer end of the ferrule having a smaller internal diameter than the majority of the ribs of the innermost set of which the rib adjacent the groove has an internal diameter substantially equal to that of the ribs of the outer-set.

3,711,132
METAL TUBE END FITTING

Harvey R. Nickerson, Roseland, N.J., assignor to Resistoflex Corporation, Roseland, N.J.

Filed June 17, 1970, Ser. No. 46,983
Int. Cl. F16l 13/14
U.S. Cl. 285—382.4 15 Claims



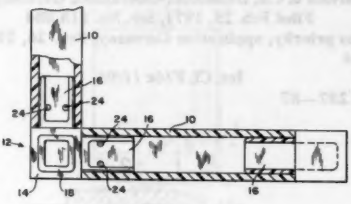
The axially spaced circumferential grooves within the bore of an end fitting to which a metal tube is attached by radial expansion are provided with a special contour. The group of grooves nearest the exterior of the fitting is provided with inclined sidewalls, while the inner adjacent group is provided with perpendicular sidewalls. In the process of assembly, the perpendicular sidewall grooves are substantially filled by the metal of the tubing while the inclined sidewall grooves are only partially filled.

3,711,133
EXPANDABLE AND CONTRACTIBLE TUBING SUPPORT STRUCTURE

Otto V. Werner, 11 Pine Ridge Road, Poughkeepsie, N.Y.

Filed June 2, 1971, Ser. No. 149,181
Int. Cl. F16b 7/00
U.S. Cl. 287—54 A 7 Claims

A tubing structure including a plurality of non-round, hollow, open-ended tubing sections with a plurality of end connectors. The structures may be selectively expanded or contracted according to the user's requirements. The end connectors maintain a frictional connection of considerable strength

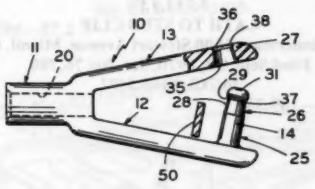


between the adjacent tubing sections. The tubing structure, when assembled, is a strong, rigid, and stable support for a variety of uses.

3,711,134
ONE-PIECE CLEVIS

Carl Goldberg, Chicago, Ill., assignor to Carl Goldberg Model, Inc., Chicago, Ill.

Filed July 16, 1971, Ser. No. 163,285
Int. Cl. F16c 11/00
U.S. Cl. 287—100 13 Claims

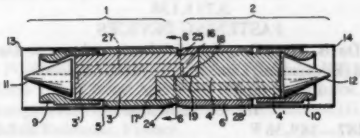


A clevis is disclosed herein providing a one-piece structure having an attaching body with spread-apart resilient bearing support arms in the as-formed condition with a pintle extending from one of the arms toward the other arm and adapted to be retained in an aperture retaining means in the other arm.

3,711,135
QUICK COUPLING FOR CONNECTING TOGETHER CONDUCTORS, HOSES AND SIMILAR ELONGATED MEMBERS

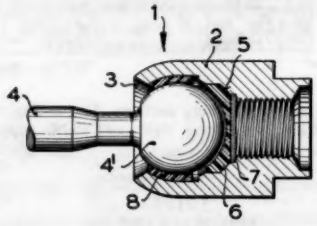
Ake Akesson, Vasterledstorg 3, 161 37 Bromma, Sweden

Filed Feb. 5, 1971, Ser. No. 113,008
Int. Cl. F16d 1/00
U.S. Cl. 287—104 8 Claims



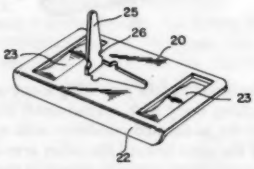
The present invention relates to a quick coupling for connecting together conductors, hoses and similar elongated members, the coupling comprising two similar joint fittings, each of the fittings being adapted to be fastened to the end of the conductors, hoses or other elongated members.

3,711,136
VEHICLE BALL JOINT WITH CRIMPED HOUSING AND METHOD AND APPARATUS FOR FORMING SAME
Andreas Schmidt, Osterath-Vovert, Germany, assignor to A. Ehrenreich & Cie, Dusseldorf-Oberkassel, Germany
Filed Feb. 25, 1971, Ser. No. 118,884
Claims priority, application Germany, Feb. 26, 1970, P 20 08 935.4
Int. Cl. F16c *11/06*
U.S. Cl. 287—87 **1 Claim**



A ball and socket joint for a vehicle having a crimped housing; and a method of and apparatus for forming the crimped housing which includes pressing a die having a concave opening against a cylindrical housing to crimp down the wall thereof to conform with the ball head.

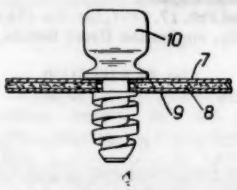
3,711,137
LATH TO STUD CLIP
George A. Tinnerman, 3600 Stewart Avenue, Miami, Fla.
Filed Sept. 30, 1970, Ser. No. 76,780
Int. Cl. F16b *5/07*
U.S. Cl. 287—189.35 **2 Claims**



A fastener in the form of a clip formed from sheet metal has a pair of tongues struck out and spaced from one side to engage a flange of a support and a bendable prong, struck out from the base between the tongues and projecting perpendicularly from the opposite side of said tongues, so that the tongue can be projected through a panel of metal lath and bent over to secure the lath to the support. The prong may be reduced in width adjacent the base to facilitate bending. Two tongues facing the first two tongues struck out on the same side are bent from the base and engage the support to prevent withdrawal of the clip.

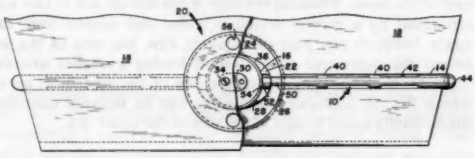
3,711,138
FASTENING DEVICES
Maurice Davis, West Croydon, England, assignor to Davis Industrial (Equipment) Limited, Croydon, England
Filed Jan. 27, 1970, Ser. No. 6,216
Int. Cl. F16b *5/02*
U.S. Cl. 287—189.36 F **7 Claims**

A fastening device for rapidly securing two parts, such as an inspection plate or cover on a main frame or casing in which the cover and frame or casing have plain holes drilled, stamped or otherwise formed therein so as to be in register in the assembled condition, the fastener having a helical land engageable with a pair of such holes by rotation while inclined to the plane of each hole and by continued rotation being movable relative to the cover and frame or casing to bring the margins defining the holes into engagement between a head of the



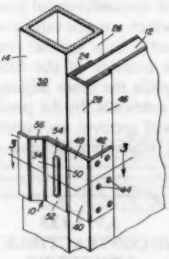
fastener and an end face of the land which terminates short of the head.

3,711,139
PRESSURE ACTUATED SPRING BIASED LATCH
Albert S. Polk, Jr., Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy
Division of Ser. No. 889,206, Dec. 30, 1969, Pat. No. 3,648,953. This application Aug. 20, 1971, Ser. No. 173,445
Int. Cl. E05c *1/06*
U.S. Cl. 292—37 **3 Claims**



The subject invention provides a latch mechanism particularly suitable for snap-lock attachment of a structure holding the latch to a structure having mating recesses. Generally, the invention relates to spring-biased, cam-operated latches and more particularly to a positive-locking latch device in which a circular band spring biases locking pins into retaining holes in a structure to which the latch is being attached. The latch is released by rotating a cam actuator which contacts the locking pins and withdraws them from the retaining holes.

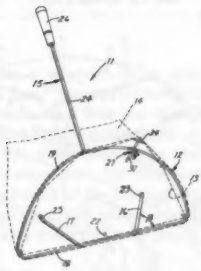
3,711,140
CABINET DOOR LATCH
Bruno Onori, 4250 N.W. 135th Street, Miami, Fla.
Filed April 9, 1971, Ser. No. 132,655
Int. Cl. E05 *19/06*
U.S. Cl. 292—87 **1 Claim**



This device is intended for readily latching and releasing the door of a cabinet, particularly of a portable cabinet such as used commercially in restaurants, bakeries, cafeterias, hospitals, etc., with removable racks or trays. It consists of a keeper plate which is secured to the side of the latch door

jamb and a raised boss for cooperating with a complimentary aperture in a latch plate member which is secured in cooperating position on the door. The latch plate member consists of an angle iron member, one angle face of which is secured on the front face of the door with its other angle face abutting the edge face of the door and having a stepped latch plate extending therefrom, with a boss cooperating aperture, and sliding over the boss on the keeper plate by means of an angle lip, which lip terminates in a tongue handle for manually lifting the latch plate to release position when opening the door.

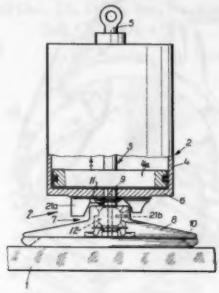
3,711,141
BAG HOLDER
Loren G. Soergel, 1011 Michigan Avenue, South Haven, Mich.
Filed Aug. 17, 1970, Ser. No. 64,493
Int. Cl. A47f 13/08
U.S. Cl. 294—55 **6 Claims**



A device for holding open the mouth of a flexible receptacle, particularly a large plastic bag, for enabling the bag to be filled with grass, leaves or the like. The holding device includes a loop-like frame having a substantially D-shaped configuration and adapted to be disposed within the mouth of a bag for holding same open. The frame has a plurality of small projections which are adapted to engage the free edge of the bag. An elongated handle is secured to the frame and extends upwardly from the curved portion thereof for enabling the frame to be disposed in a substantially vertical position with the lower straight portion of the frame being disposed adjacent the ground. A pair of legs are fixedly secured to and extend rearwardly of the straight portion of the frame for enabling the frame, when a bag is disposed thereon, to be vertically supported on the ground whereby leaves and the like can be pushed directly into the open mouth of the bag.

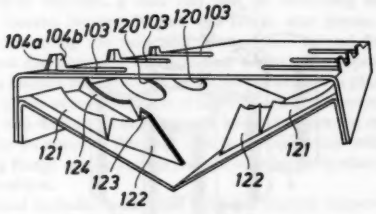
3,711,142
SUCTION OPERATED LIFTING DEVICE
Karlheinz Wolski, Bochum-Langendreer, Germany, assignor to Demag Aktiengesellschaft, Duisburg, Germany
Filed Feb. 19, 1971, Ser. No. 116,836
Claims priority, application Germany, April 7, 1970, P 20 16 501.9
Int. Cl. B66c 1/02
U.S. Cl. 294—64 R **1 Claim**

A device for lifting areal objects comprises a piston and cylinder arrangement which includes a piston rod extending from a cylinder for support by a lifting crane. The cylinder is connected to a suction disc by means of a pivotal ball joint. The suction line for the suction disc is characterized as a bore which extends from the cylinder through the ball joint and



opens into a suction chamber defined on the underface of a suction disc which surrounds the bore.

3,711,143
PLATE BLANK FOR CARRYING DEVICES FOR BOTTLES AND A CARRYING DEVICE FOR BOTTLES
Preben Smed, Copenhagen Vanlose, Denmark, assignor to Packaline AG, Zug, Switzerland
Filed Nov. 25, 1970, Ser. No. 92,820
Claims priority, application Denmark, Dec. 1, 1969, 6363; Sept. 8, 1970, 4619
Int. Cl. B65d 71/00
U.S. Cl. 294—87.2 **5 Claims**

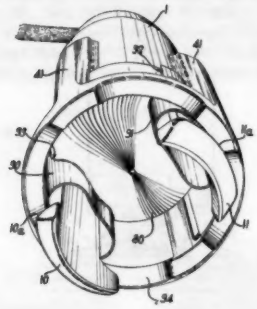


A plate blank of cardboard or a similar material consisting of a plurality of carrying devices for bottles, which devices are interconnected by weakening lines so that the plate blank as a unit can be mounted on all the bottles which are arranged vertically in a case, and the weakening lines simultaneously or later can be broken, so that a plurality of carrying devices each engaging a group of bottles are constituted in the case, so that the carrying devices with bottles can be removed from the case independently. The invention also includes a carrying device of the said kind having stiffening flanges along their edges and in another embodiment two layers, so that each carrying device in loaded condition is shaped like a three-dimensional beam with great strength and stiffness.

3,711,144
GRAB FOR FUEL ELEMENTS OF A NUCLEAR REACTOR
Paul-Marie Henri Briot, Le Plessis Robinson, France, assignor to Groupement Atomique Alsacienne Atlantique (G.A.A.A.), Le Plessis Robinson, France
Filed Nov. 13, 1970, Ser. No. 89,242
Int. Cl. B66c 1/44
U.S. Cl. 294—86 A **2 Claims**

An electric grab for handling fuel elements in a nuclear reactor through which a coolant gas is circulated in the direction of introduction of the grab, each grab jaw being associated with a streamlined cowling which surrounds the jaw

over the greater part of its length and has a curvature which is determined by experiment. The cowling is rigidly fixed on the



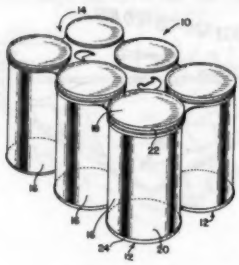
one hand to the lower portion of the grab body and on the other hand to lateral guiding uprights of the grab.

3,711,145

CONTAINER CARRIER PACKAGE

George M. Rapata, Park Ridge, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Continuation of Ser. No. 777,441, Nov. 20, 1968, abandoned.
This application July 9, 1971, Ser. No. 161,264
Int. Cl. B65d *71/00*
U.S. Cl. 294—87.2 8 Claims



A container package including one or more containers or the like in a plastic sheet carrier device having a corresponding number of constrictive apertures provided therein for receiving and gripping containers to form a multipackage unit, the plastic sheet carrier device including features of the one or more several embodiments disclosed which enhance the tensile strength of each of the constrictive apertures of the carrier device as well as the carrier device itself.

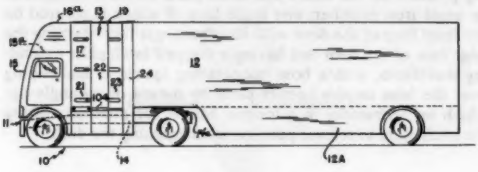
3,711,146

STREAMLINED VEHICLE CONFIGURATION

George C. Madzsar, Lakewood, and Otto Kozma, Wickliffe, both of Ohio, assignors to White Motor Corporation, Cleveland, Ohio

Filed July 29, 1970, Ser. No. 59,238
Int. Cl. B62d *35/00*
U.S. Cl. 296—1 S 24 Claims

A tractor-trailer combination is streamlined by a tunnel-like air shield between the tractor cab and trailer to effect a smooth continuous body configuration. The air shield is a telescoping self-supporting structure, the length of which can be easily adjusted for the various spacings of different trailers from the tractor. The portion of the shield engaging the forward end of the trailer is flexible to permit normal articulation between the tractor and trailer. The air shield may be temporarily retracted manually or by drive-controlled power



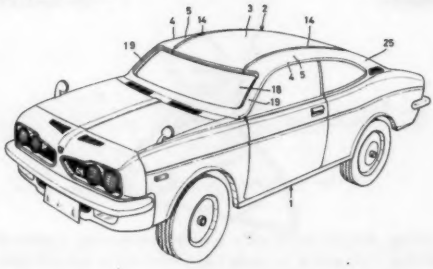
means to prevent distortion of the shield during negotiation of abnormally sharp turns.

3,711,147

DRAIN APPARATUS FOR THE BODY OF A CAR

Shizuo Higuchi, Itabashi-ku, Tokyo, and Michiyoshi Hagino, Kitaadachi-gun, Saitama-ken, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha

Filed Feb. 22, 1971, Ser. No. 117,523
Claims priority, application Japan, Feb. 23, 1970, 45/14838
Int. Cl. B62d *25/06*
U.S. Cl. 296—28 R 9 Claims



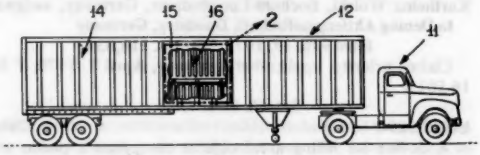
A car body of a motorcar comprises a roof formed by a central main panel and a pair of left and right auxiliary panels welded to the main panel along the opposite side edges thereof. A pair of left and right troughs are provided below the roof extending longitudinally along the inside edges of the left and right welded portions, respectively, and each of these troughs is in communication, at least at one of the ends thereof with the interior of a hollow window frame formed along a corresponding end edge of the roof. The hollow window frame opens into a pair of left and right pillars extending downwards from the opposite ends of the window frame and the pillars in turn open into side beams with apertures wherefrom water can be discharged which is collected in the trough.

3,711,148

LINER ARRANGEMENT FOR REFRIGERATED TRAILERS

Eugene Hindin, Philadelphia, Pa., assignor to Gindy Manufacturing Corporation, Downingtown, Pa.

Filed April 30, 1971, Ser. No. 139,092
Int. Cl. B60p *3/20*
U.S. Cl. 296—28 M 1 Claim



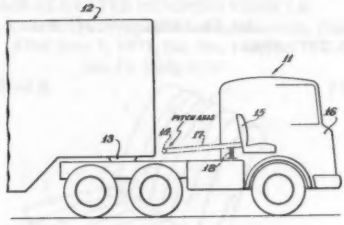
A liner assembly for the interior of a refrigerated trailer body. The assembly includes aligned corrugated upper and

lower panels. The lower panels correspond to areas of heavy abuse due to puncturing of panels by tines of fork lift trucks or pallets and are secured to the side walls to permit ready replacement.

3,711,149
VEHICLE SEAT

John W. Carter, Alexandria, Va., assignor to Seats, Inc., Reedsburg, Wis.

Filed July 22, 1970, Ser. No. 57,187
Int. Cl. B60n 1/00
U.S. Cl. 296—63 22 Claims



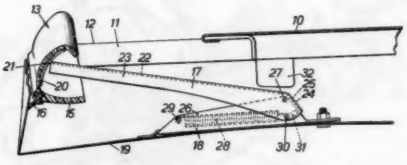
The disclosed seat is adapted to be utilized with vehicles having their "pitch axes" located either in front of or behind the seat. The seat includes a four-bar linkage assembly which supports the seat and which is arranged so that each of the lines of action of each of the links of the four-bar assembly intersect substantially adjacent to the transverse pitch axis of the vehicle. This arrangement of the lines of action of the links of the four-bar linkage assembly substantially minimizes the "back-slapping" action from the seat during operation of the vehicle.

In some of the disclosed embodiments, the bottom cushion pan of the seat forms a part of the four-bar linkage assembly. Also, in some embodiments, the bottom cushion and the back cushion are pivotally interconnected and the bottom cushion is arranged so as to pivot about a point adjacent to and slightly above its upper, front edge. This arrangement permits the bottom cushion to move, in the fore-aft direction, in synchonism with and the same amount as the back cushion and thus provides an even more comfortable ride.

3,711,150
HINGED DEFLECTORS FOR SLIDING ROOFS

Joseph Perks, Birmingham, England, assignor to Weathershields Limited, Birmingham, England

Filed Jan. 7, 1971, Ser. No. 104,727
Claims priority, application Great Britain, Jan. 10, 1970, 1.300/70
Int. Cl. B60j 7/10
U.S. Cl. 296—137 E 2 Claims

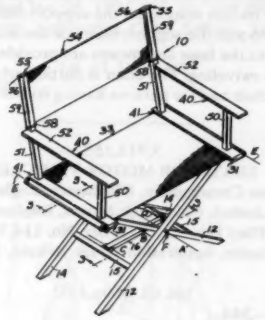


A hinged draught deflector for a vehicle sliding roof comprises a flap carried by a pair of transversely spaced longitudinal arms. The arms are pivotally connected to brackets for connection to the fixed roof structure on opposite sides of an opening adapted to be closed by a slidable panel. Springs act between the arms and the brackets to urge the flap upwardly and rearwardly into a raised operative position.

3,711,151
FOLDING FURNITURE CONSTRUCTION

Hugh Max Upton, Gadsden, Ala., assignor to Etowah Manufacturing Company, Inc., Gadsden, Ala.

Filed Oct. 22, 1970, Ser. No. 82,939
Int. Cl. A47c 4/28
U.S. Cl. 297—45 6 Claims



An all metal folding furniture construction having front and rear sets of pivotally connected cross legs including a jointed locking bracket connecting the cross members extending between each pair of aligned front and rear legs. The jointed bracket includes a pair of U-shaped links pivoted to each other at one end and to the cross members at their other ends. Abutment surfaces are provided to lock the rotational position of the bracket when the joined ends of the links pass below the line joining the pivots at the cross members.

The chair includes a side rail and an overlying runner pivoted thereto between which the fabric seat passes. The hinges connecting the rails and runners are spaced further apart than the depth of the seat and a pair of co-operating retaining flanges hold the welt and core of the seat in place regardless of the pivotal position of the side rail and runner. The side rail also defines an anvil spaced inwardly from the retaining flange to support the seat and in co-operation with the clamping flange on the runner, serves to selectively clamp the seat in position.

The stool includes a side rail having a curved support surface to support the seat adjacent the welt and core and a key hole slot which passes along the length thereof to selectively retain the welt and core of the seat therein.

3,711,152
HEALTH CHAIR

Casey R. Sirpak, and Yarl Pretorius, both of Cleveland, Ohio, assignors to Casey Sirpak, Incorporated, Cleveland, Ohio

Filed Aug. 11, 1971, Ser. No. 170,738
Int. Cl. A47c 3/026
U.S. Cl. 297—282 8 Claims

A chair having a contoured portion defining a back rest and a seat. The seat has a central recess extending inwardly from

its forward edge of a size and shape to accommodate the upper legs of a person. The contoured portion of the chair is pivotally suspended upon a support member which in turn is supported on a base. The contoured portion is adjustable to different heights with respect to the base. The contoured portion preferably includes a frame and cushions supported by the frame. The chair may be provided with arm rests and lower leg rests. Preferably, the contoured portion is pivotally suspended at its arm rests upon the support member. The contoured portion and the support member are adapted to swivel with respect to the base and means are provided to selectively prevent such swiveling. The chair is particularly advantageous as a marital chair and for persons having stiff or ailing backs.

3,711,153
SEATS FOR MOTOR VEHICLES

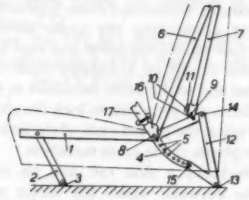
Douglas James Cunningham, Chichester, England, assignor to Wingard Limited, Chichester, Sussex, England

Filed Feb. 12, 1971, Ser. No. 114,779

Claims priority, application Great Britain, Feb. 24, 1970, 8,929/70

Int. Cl. B60n *1/02*

U.S. Cl. 297—346 **9 Claims**



In a vehicle seat which is adjustable in a fore-and-aft direction the rear end of the seat frame is carried at each side by a support member which is pivotally connected to said frame and to a floor anchorage and is also selectively connected to the said frame at any one of a plurality of points spaced from their pivotal connection.

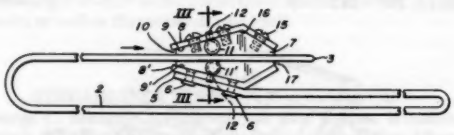
3,711,154
BODY RESTRAINING MEANS

Anthony Merola, Pittsburgh, Pa., assignor to Amerola Products Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 825,369, May 16, 1969, Pat. No. 3,653,708. This application Sept. 7, 1971, Ser. No. 178,245

Int. Cl. A44b *11/08, 21/00*

U.S. Cl. 297—385 **8 Claims**



A body restraining means in the nature of a safety belt having a novel and efficient belt locking means. A safety belt comprising a flexible strip of material has a tongue at one end and a safety buckle at the other end. The safety buckle is formed from a frame having converging, confronting plate members and rollers which are resiliently secured to the surfaces of the plate members. The arrangement is such that the tongue, when inserted between the rollers of the buckle, is frictionally secured by the rollers and forces which would withdraw the tongue from between the rollers in the direction normal to the roller axes, act to tighten the grip of the rollers on the tongue and prevent removal therefrom.

3,711,155
CUSHIONED SEAT, ESPECIALLY MOTOR VEHICLE SEAT WITH QUILTING

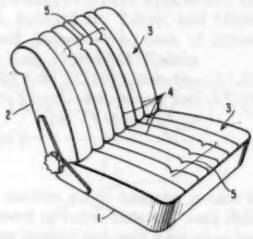
Kurt Bandel, Monchberg; Walter Bartle, Sindelfingen; Ewald Gunther, Dagersheim; Adolf Honegg, Datzingen, and Heinz Stahl, Sindelfingen (Wurttemberg), all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Dec. 4, 1970, Ser. No. 95,090

Claims priority, application Germany, Dec. 4, 1969, P 19 60 831.2

Int. Cl. A47c *27/08, 27/18*

U.S. Cl. 297—456 **15 Claims**



A cushioned seat, especially a motor vehicle seat, in which the seat cushion and also possibly the back rest essentially consists of a spring box, of a molded cushion support arranged on the spring box and of a cover that is interrupted by wedge-like folds or the like; the cover also includes quilts whereby a band or tape is secured at the place of the quilting on the wedge-like folds or the like of the cover while the molded cushion support is provided with an indentation and the band is secured in this indentation.

3,711,156
SUPPORT SYSTEMS FOR THE SEATED HUMAN BODY

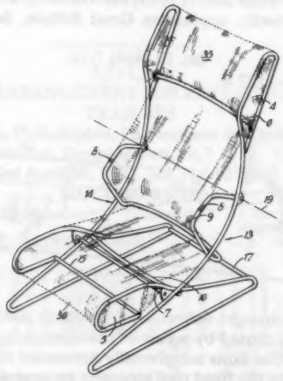
Jack Bloomfield, London, England, assignor to British Railways Board, London, England

Continuation-in-part of Ser. No. 196,484, Nov. 8, 1971, which is a continuation of Ser. No. 878,849, Nov. 21, 1969, abandoned. This application April 13, 1971, Ser. No. 133,603

Claims priority, application Great Britain, April 22, 1970, 19,285/70

Int. Cl. A47c *7/02*

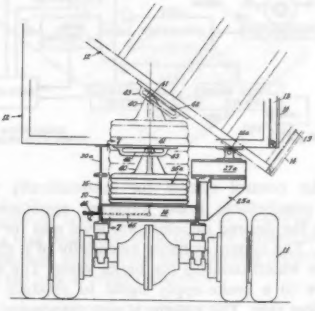
U.S. Cl. 297—457 **12 Claims**



A support system for the seated human body comprising a length or lengths of net material constrained under tension in a supporting frame to form a seat portion and a back support

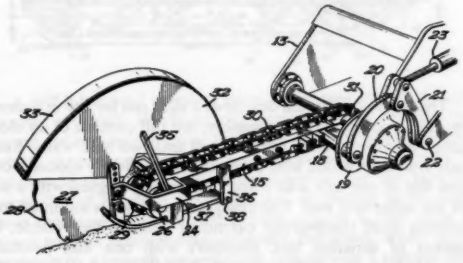
portion. The net material forming the back support is attached to the supporting frame to provide a transversely extending forwardly projecting support portion for the upper pelvic/lumbar area and sweeps downwardly and rearwardly from this support portion to a position out of contact with the human body and upwardly and rearwardly from the support portion to form the remainder of the back support. The side edges of the net material are not attached to the supporting frame over the downwardly and upwardly sweeping portions and tension is applied longitudinally to the net material over the back support through members of the supporting frame.

3,711,157
AIR-ELEVATED DUMPING VEHICLE
Edmund G. Smock, 1502 Augusta Street, Zanesville, Ohio
Filed June 1, 1971, Ser. No. 148,738
Int. Cl. B60p *1/16*
U.S. Cl. 298—8 R **7 Claims**



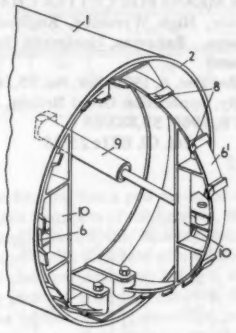
A dumping vehicle comprising a dump body pivotally mounted on the vehicle chassis frame for movement between a horizontal normal position and an inclined dumping position using an air bag or air bellows as a means of power to raise and lower the dump body. The dump body is so pivoted and the air bellows is so disposed between the body and the chassis frame that maximum lift is obtained with a minimum stroke of the air bellows.

3,711,158
ROTARY TRENCHES HAVING ADJUSTABLE DEPTH CONTROL MEANS
Wilfred H. Butcher, Watertown, Minn.
Filed Dec. 7, 1970, Ser. No. 95,544
Int. Cl. E02f *5/08*
U.S. Cl. 299—27 **1 Claim**



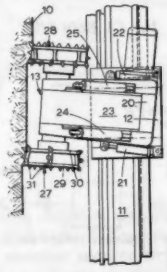
A trench-forming device includes an elongate boom which is swingably mounted on a transverse drive shaft of a vehicle. A revolvable blade is carried by the outer end of the boom and is driven by an endless chain and sprocket which is connected to the drive shaft of the vehicle. An adjustable depth-control member is mounted on the boom to permit adjustable control of the depth of the trench being formed.

3,711,159
TUNNELLING MACHINES
Peter Charles Mazzotti, Hindhead, Surrey, England, assignor to Streeters Plant Hire Limited, Godalming, Surrey, England
Filed Jan. 25, 1971, Ser. No. 109,496
Claims priority, application Great Britain, June 17, 1970, 29,347/70
Int. Cl. E01g *3/03*
U.S. Cl. 299—33 **6 Claims**



A tunnelling machine, more particularly but not exclusively intended to operate in soft ground, comprises a tubular cutting and protection shield which is periodically advanced with reference to a base or an already erected section of tunnel lining and is preferably characterized by the provision at the forward end of the shield of a pair of cutter-carrying excavating jaws which are power operated and swingable in arcuate excavating paths about parallel axes from retracted positions inside the shield to positions projecting forwardly thereof wherein the jaws are closed upon one another.

3,711,160
MINERAL WINNING MACHINES
Werner Mennekes, Weidenkamp 23, 4628 Altlunen, and Heinz Weinhold, Wildenbruchstrasse 14, 465 Gelsenkirchen, both of Germany
Filed Dec. 30, 1970, Ser. No. 102,756
Claims priority, application Germany, Jan. 7, 1970, P 20 00 370.7
Int. Cl. E21c *25/06*
U.S. Cl. 299—43 **8 Claims**



A mineral winning machine composed of a frame slidably guided in gantry-fashion on a conveyor and a carriage displaceably supported within a guideway at the top of the frame. The separation between the carriage and guideway tapers to permit the carriage to move from side-to-side in a horizontal

plane under the action of two piston and cylinder units. The carriage supports an arm pivoted to swing in a vertical plane under the action of a further piston and cylinder unit and two rotatable cutting cylinders are disposed on a shaft at the end of the arm. Each cutting cylinder is of cage like construction and formed from two axially offset rings adjoined to the shaft by radial spokes and interconnected by transverse webs. The rings and webs carry cutter bits and during use, mineral detached from a face can pass into the interior of the cutting device to be subsequently thrown out into a conveyor by the movement of the webs.

3,711,161

DRIVE MEANS FOR CUTTER CHAIN JIB

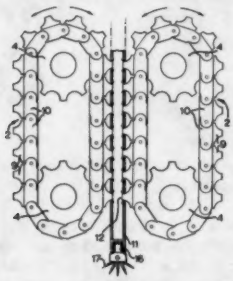
Sidney E. Proctor, High Wycombe, England, and John C. Carden, Nassau, Bahamas, assignors to Gimda Inc., Panama, Panama

Filed Dec. 4, 1970, Ser. No. 95,165

Claims priority, application Great Britain, Sept. 21, 1970, 44,950/70; Dec. 8, 1969, 59,883/69

Int. Cl. E21c *25/28*

U.S. Cl. 299—82 **1 Claim**



The invention provides drive means particularly for driving the cutter chains of mineral mining machines and the jibs or cutter chains of trenching apparatus, the drive means comprising a pair of toothed driving chains which engage from opposite sides in apertures formed in a member to be driven.

3,711,162

INSTALLATION FOR THE CONTROL OF THE BRAKES OF A VEHICLE

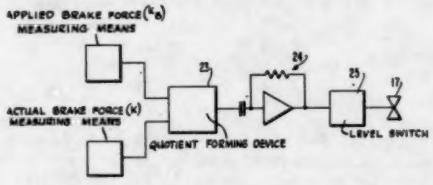
Hans Steinbrenner, Stuttgart-W; Hans-Jorg Florus, Goppingen, and Horst Grossner, Geradstetten (Wurttemberg), all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed March 20, 1970, Ser. No. 21,339

Claims priority, application Germany, March 21, 1969, P 19 14 336.3

Int. Cl. B60t *8/00*

U.S. Cl. 303—21 R **32 Claims**



An installation for controlling the brakes of a vehicle, especially for preventing the locking of the wheels, which installation controls the pressure of the brake medium at one or several brakes in dependence on the friction value between the road surface and one or several wheels; a measuring apparatus such as a force-measuring cell or a displacement transmitter is included in the mounting of the brake or brakes or of the brake lining which controls a valve arranged in the line of the brake medium depending on the development of the brake force.

3,711,163

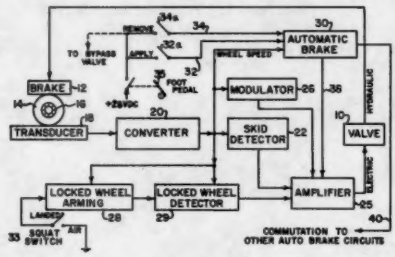
AUTOMATIC BRAKING SYSTEM

Harold R. Booher, Youngstown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sept. 30, 1970, Ser. No. 76,904

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 P **10 Claims**



A brake control system for automatically providing a smooth, comfortable brake pressure application rate for achieving the desired deceleration level and for maintaining this level. The system consists essentially of a closed looped modulator which controls the brake valve. The modulator is responsive to a brake-apply signal to produce the desired deceleration rate. The system is also responsive to a brake-remove signal to produce smooth and comfortable removal of the brake application and the system is capable of being instantly overridden to return full braking control to the vehicle operator.

3,711,164

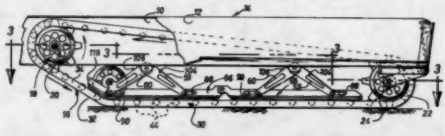
SNOWMOBILE SLIDE RAIL SUSPENSION

Guy-Noel Chaumont, Tring-Jonction, Quebec, Canada, assignor to Poly-Traction Inc., Tring-Jonction, Quebec, Canada

Filed March 9, 1971, Ser. No. 122,337

Int. Cl. B62d *55/10;* **B62m** *27/02*

U.S. Cl. 305—24 **12 Claims**



The disclosure herein describes a slide rail for use in a snowmobile-type suspension assembly; the rail consists of an elongated member with a bottom wall and two side walls. Each side wall is provided with a pair of longitudinally spaced slots, one slot of one side wall being transversely aligned with a slot of the other side wall. The elongated member is mounted to a bearing shaft transversely extending beneath the vehicle, by means of separate link members with one end pivotally mounted on the shaft and with the other end adjacent the slots, of fastening members extending through the slots and securing the lower ends of the link members, and of torsion spring means which are supported on the bearing shaft and include end portions in yielding engagement with link members disposed fore and aft relative to the bearing shaft and urging the link members in a downward direction to thereby cause

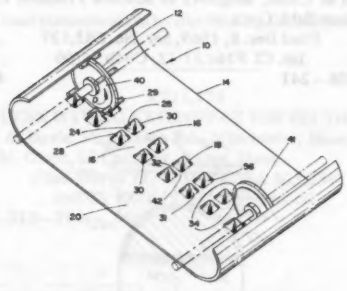
the rail to maintain contact pressure on the lower run of the track.

3,711,165

DRIVE SYSTEM FOR A FLEXIBLE TRACK

Paul E. Russ, Sr., Englewood, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed May 11, 1970, Ser. No. 36,198
Int. Cl. B62d *55/24*
U.S. Cl. 305—35 EB 19 Claims



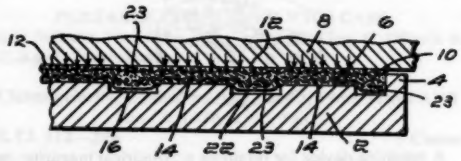
A misalignment compensating system including a flexible track having lugs projecting from its inner surface in a spaced-apart relationship, and a drive wheel having projecting tangs that engage the lugs to propel the track.

3,711,166

MEANS FOR CONTROLLING THE COEFFICIENT OF FRICTION BETWEEN BEARING SURFACES

Andrew J. Wayson, Needham, Mass., assignor to Merriman, Inc., Hingham, Mass.

Continuation-in-part of Ser. No. 766,503, Oct. 10, 1968, abandoned. This application March 3, 1971, Ser. No. 120,659
Int. Cl. F16c *17/00*
U.S. Cl. 308—3 25 Claims



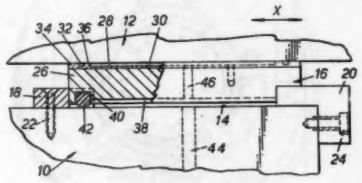
A self-lubricated pressure plate or journal for use in supporting relatively slowly moving heavy loads of the type imposed, for example, by long structural members such as beams which expand and contract under temperature changes. A fabricated sheet made of material which has the inherent capability of lowering the coefficient of friction as the pressure thereagainst is increased, rests against a first plate of novel surface configuration whereby the sheet, when under pressure by a smooth second plate, will provide a suitable sliding surface for the second plate and will be effectively secured without bonding against sliding movement with respect to the first plate. The first plate has raised or depressed areas of controlled size against which the load acting through the fabricated sheet principally bears resulting in a controlled and lower coefficient of friction at these bearing areas.

3,711,167

HYDROSTATIC BEARINGS

Brian Ennis, Halifax, England, assignor to William Asquith Limited, Halifax, England

Filed Feb. 16, 1971, Ser. No. 115,423
Claims priority, application Great Britain, July 10, 1970, 33,654/70
Int. Cl. F16c *17/00*
U.S. Cl. 308—5 R 9 Claims



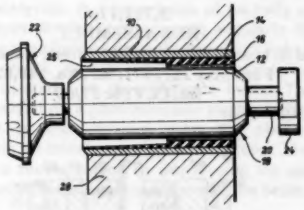
A hydrostatic bearing has a pad mounted between the two relatively movable members of the bearing, the pad being free to move perpendicular to the bearing face but restrained against movement in the direction of movement of the movable member of the bearing, there being a substantially continuous sealing element engaging between the inside face of the pad and one of the bearing members, and a second substantially continuous sealing element on the outside face of the pad for engagement with the other bearing member, the area enclosed by the inside sealing element being greater than that enclosed by the outside sealing element and means for admitting fluid under pressure simultaneously to both faces of the pad.

3,711,168

APPARATUS FOR MOUNTING A SPINNING TURBINE

Gunther Wendel, Stuttgart, and Rudolf Fingerle, Esslingen-Zollberg, both of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Filed Oct. 30, 1970, Ser. No. 85,335
Claims priority, application Switzerland, Aug. 3, 1970, 11670/70
Int. Cl. F16c *35/08*
U.S. Cl. 308—26 8 Claims

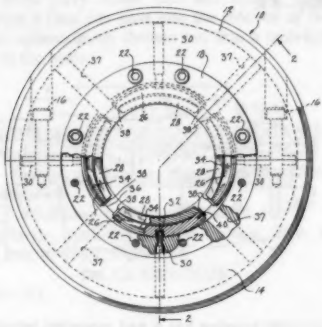


In a yarn spinning machine apparatus for mounting the bearing assembly of the spinning turbine. The apparatus comprising a bushing member secured to the machine frame or frame support and a resiliently yieldable member. The bushing envelopes the bearing assembly and is spaced therefrom to provide a radial clearance. The yieldable member is interposed between the bushing and the surface of the assembly and is secured to at least a portion of the bushing and to only a portion of the surface of the bearing assembly.

3,711,169
TILTING-FLEXIBLE PAD JOURNAL BEARING

Willis W. Gardner, Waukesha, Wis., assignor to Wankesha Bearings Corporation, Waukesha, Wis.

Filed Dec. 15, 1971, Ser. No. 208,211
Int. Cl. F16c *17/06*
U.S. Cl. 308—73 10 Claims

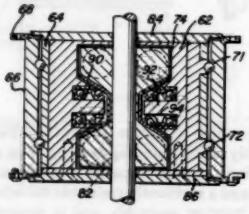


A pad-type journal bearing that utilizes both tiltable pads and flexible pads for controlling the vibrations of a relatively high speed shaft. The tiltable pads are arranged in a generally conventional manner and tilt in response to rotation and vibrations of the shaft. The flexible pads are interposed between the tiltable pads and the shaft. The radius of curvature of the inner surface of the flexible pads is slightly larger than the radius of curvature of the shaft, and the radius of curvature of the outer surface of the flexible pads is slightly larger than the radius of curvature of the adjacent inner surface of the tiltable inner pad. The radial thickness of the flexible pads is slightly smaller than the radial distance between the shaft and the inner surface of the tiltable pads. The bearing is flood lubricated. Vibrations of the shaft are transmitted as dynamic loads through the hydrodynamic oil film to the flexible pads. Due to the pad construction and beam-type support, the flexible pads deflect in the central portion when subjected to a load from the shaft weight and/or dynamic loads as from shaft vibration. Vibrations of the flexible pads alternately squeeze and expand a pocket of oil in the space between the flexible pad outer surface and the adjacent inner surface of the tilting pad to provide "squeeze film" damping. Thus this bearing design uniquely provides tilting action, beam-type support flexibility, and squeeze film damping for the control of vibrations of high speed rotors.

3,711,170
HUB ASSEMBLY

Raymond B. Leach, 222 South 88th Street, Omaha, Nebr.

Filed May 21, 1971, Ser. No. 145,825
Int. Cl. F16c *27/00*
U.S. Cl. 308—184 6 Claims

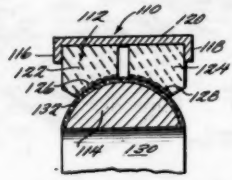


A hub assembly connecting a rotatable member to a support member, such as an axle, shaft, or the like, incorporating a resiliently suspended, laterally movable slide member enabling relative lateral movement between the rotatable member and the support thereof with such movement being cushioned and resisted by the resiliently suspended slide member. The hub assembly and particularly the resiliently biased suspension employs the use of exotic materials not previously employed in a suspension system or action of this type. In generic terms, the exotic materials include nonmetallic materials such as plastics of various types but also steel and aluminum which has been surface treated for hardening.

3,711,171
CERAMIC BEARINGS

Stanley S. Orkin, Rockville, and Alan A. Whitfield, Glastonbury, both of Conn., assignors to KAcarb Products Corporation, Bloomfield, Conn.

Filed Dec. 8, 1969, Ser. No. 883,127
Int. Cl. F16c *33/12*; C04b *35/00*
U.S. Cl. 308—241 4 Claims

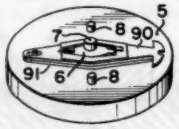


A bearing comprising two coengaging members movable relative to one another, the bearing surfaces of said members being provided by a body of ceramic material and a film of solid lubricant interposed and in engagement with both said bearing surfaces.

3,711,172
CYLINDRICAL MAGAZINE RETAINING DEVICE

Takeshi Okano, Nishinoiya, Japan, assignor to Fuji Shashin Film Kabushiki Kaisha, Ashigarakani-gun, Kanagawa-Ken, Japan

Filed May 4, 1971, Ser. No. 140,155
Claims priority, application Japan, May 18, 1970, 45/48078
Int. Cl. A47f *1/00*
U.S. Cl. 312—97.1 8 Claims



A retaining device for retaining a cylindrical magazine on a turntable. A first retainer which is brought into direct engagement with the bottom of the magazine, is connected by way of a spring with a second retainer provided on the turntable. The first retainer is movable radially and tangentially of the turntable relative to the second retainer against the force of the spring.

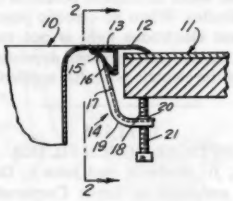
3,711,173
SINK CLAMP

Ralph Hoffman, 512 West Pine, Fairbury, Ill.

Filed Nov. 2, 1971, Ser. No. 194,857
Int. Cl. A47b *96/18*
U.S. Cl. 312—140.4 5 Claims

A sink clamp is described formed on a single piece of channeled metal. A hook portion is punched out of the upper portion of the generally L-shaped clamp, the engagement with conventional sink clips and the upper load bearing portion of

the clamp which engages with the clip is stiffened in a plane perpendicular to the axis of the attaching screw so as to



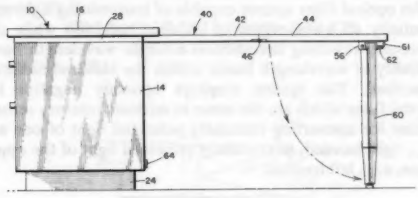
reduce load concentration by distributing the load over a large surface.

3,711,174

DESK HAVING EXTENSIBLE TOP SECTION

Donald A. Davis, 50 Johnson Rd., Winchester, Mass., and Gilbert M. Garte, 62 Curtis St., Egypt, Mass.

Filed March 11, 1971, Ser. No. 123,238
Int. Cl. A47b *17/00, 19/00, 27/00*
U.S. Cl. 312—194 **1 Claim**



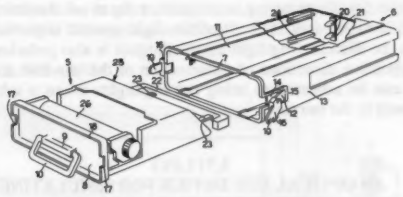
An extensible top section for a desk of the type including a pair of spaced pedestals, a fixed top and a front modesty panel, the extensible top section comprising a pair of hinged leaf sections adapted when folded to be stored within said desk below said fixed top and overhanging the modesty panel. When the leaf sections are withdrawn and supported, the sections extend parallel to the fixed top and form a continuation of the top work surface of the desk.

3,711,175

PORTABLE TYPEWRITER WITH CASE

Ettore Sottsass, Jr., Milan, Italy, assignor to Ing. C. Olivetti & C. S.p.A., Ivrea, Italy

Filed Feb. 11, 1970, Ser. No. 10,446
Claims priority, application Italy, May 3, 1969, 51694 A/69
Int. Cl. A47b *21/00, 89/00*
U.S. Cl. 312—208 **5 Claims**



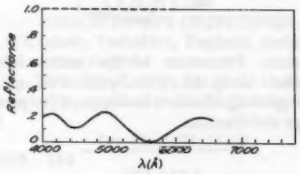
A portable typewriter and case assembly in which the typewriter is insertable into the case through an open end thereof. A panel for closing the open end of the case is affixed to the back of the typewriter. Flexible connecting means are secured to the case and are engageable with the panel for removably securing the panel to the case when the typewriter is inserted into the case.

3,711,176

HIGHLY REFLECTIVE THERMOPLASTIC BODIES FOR INFRARED, VISIBLE OR ULTRAVIOLET LIGHT

Turner Alfrey, Jr., Midland, and Walter J. Schrenk, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 876,181, Nov. 26, 1969, abandoned, which is a continuation of Ser. No. 562,220, July 1, 1966, abandoned. This application Jan. 14, 1971, Ser. No. 106,459
Int. Cl. G02b *5/28*
U.S. Cl. 350—1 **16 Claims**



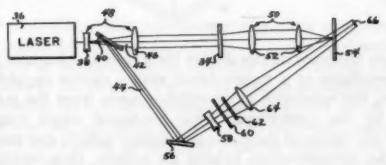
Highly reflective colored plastic film is prepared from transparent plastics having no pigment or inorganic material by forming the film from a number of layers of different thermoplastic materials which differ in refractive index and the layer thicknesses are from about 0.05 micron to about one micron.

3,711,177

APPARATUS FOR MAKING AND RECONSTRUCTING REFERENCE BEAM CODED HOLOGRAMS

John H. Ward, Chelmsford, Mass., assignor to Optronics International, Inc., Chelmsford, Mass.

Division of Ser. No. 070,762, Sept. 9, 1970, Pat. No. 3,647,275. This application March 3, 1972, Ser. No. 231,544The portion of the term of this patent subsequent to March 7, 1989, has been disclaimed.
Int. Cl. G02b *27/00*
U.S. Cl. 250—220 **16 Claims**



An apparatus for making and reconstructing a reference beam coded hologram. A source beam of partially coherent light is amplitude divided into separate angularly displaced reference and object light beams with the object light beam illuminating an object. A beam scrambler is used to introduce random path distances in the reference beam. The beam scrambler is imaged on a photosensitive member. The object modified light is also directed upon the photosensitive member to form an interference pattern thereon. The resulting hologram is reconstructed by introducing the same random path distances in the hologram illumination beam.

3,711,178

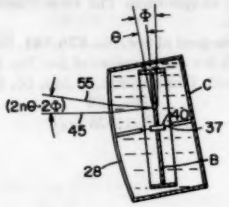
MIRROR STABILIZER HAVING SPACE REFERENCED MOTION

William E. Humphrey, Berkeley, Calif., assignor to Optical Research and Development Corporation, Oakland, Calif.

Filed Sept. 28, 1970, Ser. No. 75,965
Int. Cl. G02b *23/02*
U.S. Cl. 350—16 **13 Claims**

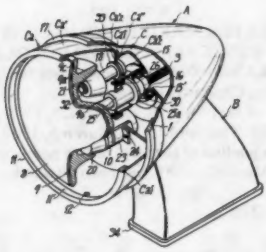
A mirror is neutrally supported in and biased in alignment with a window in a fluid filled chamber. The fluid, acting on both the sidewalls of the chamber and the surfaces of the mir-

ror, causes the mirror to undergo proportional angular motion with respect to an inertial reference system when the chamber is subjected to vibrational angular motion with respect to the



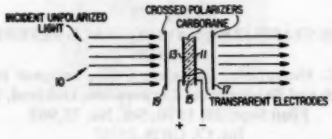
reference system. Placement of the mirror stabilizer at preselected points along the optical path of an optical instrument having high magnification is disclosed for producing instrument image stabilization.

3,711,179
ROTARY REARVIEW MIRROR FOR VEHICLES
Kin-Ichi Takeda, c/o Takeda Kinzoku Sangyo Co., Ltd. 8, 10, 2-chome, Yanagibashi, Taito-ku, Tokyo, Japan
Filed Sept. 2, 1970, Ser. No. 68,906
Int. Cl. G02b *5/08*
U.S. Cl. 350—62 **1 Claim**



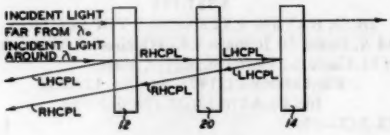
A rotary rearview mirror device for a vehicle, characterized by the provision of a motor-driver rotary mirror capable of scattering the raindrops or snowflakes away from the mirror surface by the centrifugal force produced when rotated, whereby the driver of the device-equipped vehicle can exactly realize the circumstances behind his vehicle, thus making it possible to ensure safety drive in the rain or snow.

3,711,180
OPTICAL SWITCHING AND VIDEO DEVICES USING ORGANO-SUBSTITUTED CARBORANES
Theodore J. Klinger, Oxford, Miss., and John R. Wright, Batesville, Ark., assignors to The University of Mississippi, University, Miss.
Filed Aug. 24, 1971, Ser. No. 174,472
Int. Cl. G02f *1/26*
U.S. Cl. 350—150 **18 Claims**



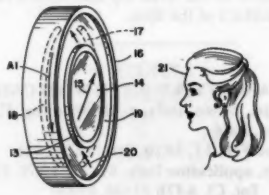
Optical switching and video devices using organo-substituted carboranes are disclosed. These devices comprise a pair of transparent electrodes containing an organo-substituted carborane between them. Located on either side of the transparent electrodes are a pair of crossed polarizers. A light beam is directed toward one polarizer and emerges from the other polarizer when an electric potential is applied to the transparent electrodes. When no electric potential is applied to the transparent electrodes light is not transmitted. The color of the light transmitted or passed depends on the intensity and duration of the electric potential applied.

3,711,181
OPTICAL NOTCH FILTER
James E. Adams, Jr., Ontario, and John L. Dailey, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed March 5, 1971, Ser. No. 121,378
Int. Cl. G02f *1/24*
U.S. Cl. 350—157 **16 Claims**



An optical filter system capable of transmitting light at substantially all wavelengths of incident radiation while simultaneously rejecting radiation at a single wavelength band or plurality of wavelength bands within the incident radiation is described. The system employs optically negative liquid crystal films which are the same in intrinsic rotatory sense and means for converting circularly polarized light of one sense, e.g., right handed, to circularly polarized light of the opposite sense, e.g., left handed.

3,711,182
GLARELESS MIRROR USING RELATIVELY ROTATABLE POLARIZERS
Joseph Jasgur, 7673 Melrose Avenue, Los Angeles, Calif.
Filed May 17, 1971, Ser. No. 143,994
Int. Cl. G02b *5/30*
U.S. Cl. 350—159 **5 Claims**

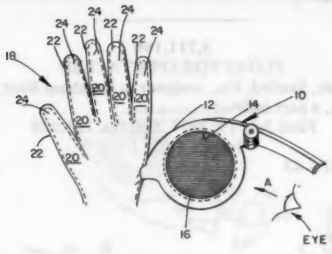


A mirror having a polarized surface cooperates with a light source for illuminating a subject in front of the mirror. A polarized window in front of the light source is provided so that the illuminating light on the subject is also polarized and the relative directions of polarization of the window and mirror can be adjusted to bring out highlights when a subject is viewed in the mirror.

3,711,183
AN OPTICAL TOY DEVICE FOR SIMULATING STEREOSCOPIC X-RAY IMAGES
Harold N. Braunhut, c/o Honney Toy Industries, 200 Fifth Avenue, New York, N.Y.
Filed May 19, 1971, Ser. No. 144,818
Int. Cl. G02b *5/18*
U.S. Cl. 350—162 R **7 Claims**

An optical device comprising a generally transparent body for intercepting light emitted from an object and through

which the object may be viewed. The light-transmissive body includes opposite surfaces on at least one of which is provided



a plurality of transversely contiguously generally parallel grooves for operating upon light emitted from the object being viewed and simulating an X-ray image of the latter object.

3,711,184

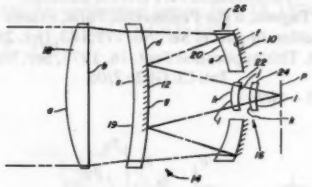
LARGE CATADIOPTRIC OBJECTIVE

Max Amon, Farmingdale, and Seymour Rosin, Massapequa, both of, assignors to Kollsman Instrument Corporation, Syosset, N.Y.

Filed April 12, 1971, Ser. No. 133,223

Int. Cl. G02b *17/08*

U.S. Cl. 350—201 **1 Claim**



An objective system of high relative aperture for low-light-level application comprises a catadioptric system, utilizing a single glass type and only spherical surfaces, and includes three large correctors in front of the primary, and a field corrector element located near the focal plane. One of the large corrector elements is combined with the primary to form a Mangin mirror, the secondary is made coincident with the rear surface of the intermediate corrector, and the forwardmost of the corrector elements is positive.

3,711,185

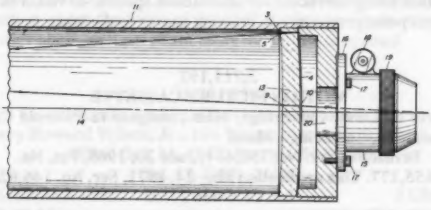
CATADIOPTRIC TELESCOPE

Harry R. McKinley, Rattle Hill Road, Southampton, Mass.

Continuation-in-part of Ser. No. 11,195, Feb. 13, 1970, abandoned. This application May 3, 1971, Ser. No. 139,839

Int. Cl. G02b *17/08*

U.S. Cl. 350—201 **6 Claims**



A fixed optics telescope is described with two meniscus shaped lenses fixed at the ends of the telescope body. The lenses have spherical surfaces of long radius of curvature. The first meniscus at the end of the telescope which is struck by light rays has a small part of the center formed into a mirror by silvering, aluminizing, and the like. The rear or convex surface of the meniscus at the other end of the telescope housing is formed into an annular mirror with a clear central portion. All surfaces are spherically ground and preferably have identical radii of curvature. The system is catadioptric, entering rays are preferably refracted by four passages through the lenses which corrects spherical aberration in the mirrors, which in this preferred form are second surface mirrors.

3,711,186

MICROSCOPE OBJECTIVES

Anthony O'Connor, Yorkshire, England, assignor to Vickers Limited, London, England

Filed Feb. 2, 1971, Ser. No. 111,866

Claims priority, application Great Britain, Feb. 10, 1970, 6,385/70

Int. Cl. G02b *21/02*

U.S. Cl. 350—214 **1 Claim**

An apochromatic microscope objective comprises a first lens assembly of converging lens elements, a second lens assembly of correcting lens elements for reducing aberrations present in the beam as a result of passage through the first lens assembly, an a field-flattening lens assembly which includes first and second positive-power lens elements made of glass that is anomalous in the same sense as fluorite, and first and second negative-power lens elements. The first negative-power lens element is made of glass that is anomalous in the opposite sense to fluorite and is one component of a positive-power compound lens of which the first positive-power lens element is another component. The second negative-power lens element is spaced from the compound lens to impose negative field curvature on the light beam and is one component of a compound lens of high negative power a further component of which is the second positive-power lens element.

3,711,187

SYSTEM OF MULTIPLE OBJECTIVES

Luis Antonio Adiego de la Parra, Madrid, Spain, assignor to Empresa Nacional De Optica, S.A., Madrid, Spain

Filed Aug. 7, 1970, Ser. No. 61,995

Claims priority, application Spain, Feb. 7, 1970, 376,370

Int. Cl. G02b *7/02*

U.S. Cl. 350—254 **2 Claims**

A system of multiple objectives having an interior element having radial guideways. Objectives are mounted movably in the guideways. A rotary ring causes the simultaneous approaching or separation of all the objectives. The ring has an internal surface of cams corresponding in number to the objectives and springs urge the objectives against the cams. An

external key operates the rotary ring. A circular shutter diaphragm is provided with section cuts according to the order of projection and is activated from the outside through an

adequate transmission. A screen has as many openings as there are objectives, in order to obtain individual bundles of light rays corresponding to each objective.

3,711,188

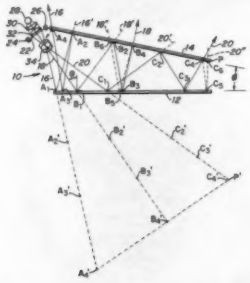
COMPACT OPTICAL DISPLAY SYSTEM

Theodore F. Zehnpfennig, Wayland, Mass., assignor to Visidyne Inc., Woburn, Mass.

Filed June 10, 1970, Ser. No. 45,112

Int. Cl. G02b *5/08*

U.S. Cl. 350—291 **11 Claims**



A display device is disclosed including first reflection means, second partially reflecting reflection means disposed at a first angle to the first reflection means and means for directing radiation from an item to be displayed to one of the reflection means at a second angle to produce multiple reflection of the radiation between the first and second reflection means and transmission through the second reflection means to provide a display of the item.

3,711,189

LIGHT DIFFUSING-NONDIFFUSING WINDOW

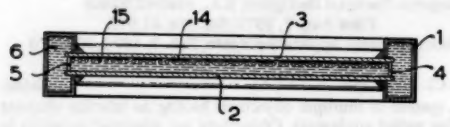
Antonin Novotny, Coburg; Gottfried Cremer, Junkersdorf near Cologne, and Ewald Heiman, Groskonigsdorf near Cologne, all of Germany, assignors to Schneider & Co., Frechen, Germany

Filed Oct. 1, 1970, Ser. No. 77,210

Claims priority, application Germany, Oct. 2, 1969, P 19 49 865.8; Jan. 22, 1970, P 20 02 855.1; Jan. 22, 1970, P 20 02 852.8; Jan. 22, 1970, P 20 02 853.9

Int. Cl. G02b *5/24*

U.S. Cl. 350—319 **18 Claims**



A window-like arrangement comprises two panes with a cavity between them. Liquid can be caused to flow into the cavity between the two panes in order to come into contact with an element having an irregular surface which, in the absence of the liquid diffuses light, and when the liquid is disposed between the panes, owing to agreement between the refractive indices of the element and the liquid, the diffusing action ceases.

3,711,190

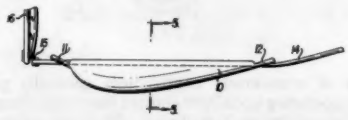
FLOAT FOR SPECTACLES

Benton Blair, Sanibel, Fla., assignor to Farnham Blair, Alexandria, Va., a part interest

Filed July 19, 1971, Ser. No. 163,928

Int. Cl. G02c *1/00*

U.S. Cl. 351—43 **2 Claims**



A float for spectacles including a blow molded air cell made of a resilient plastic material and having a pair of integral molded loops at its opposite ends. These loops, when threaded onto the temple of a pair of spectacles, are bent out of the plane in which they are molded and resiliently press against the inside of the temple to hold the air cell in mounted position thereon.

3,711,191

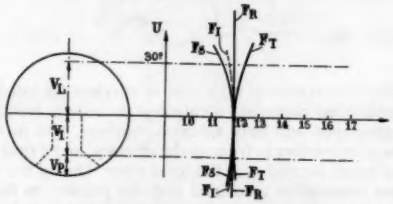
ABERRATION CORRECTED OPHTHALMIC PROGRESSIVE POWER LENSES

Luc Andre Tagnon, 6 rue Pastourelle, Paris, France

Continuation-in-part of Ser. No. 771,143, Oct. 28, 1968, abandoned. This application Sept. 16, 1971, Ser. No. 181,179

Int. Cl. G02c *7/06*

U.S. Cl. 351—169 **4 Claims**



A novel type of ophthalmic progressive lens of which the one of its two refractive surfaces is a spherical or toric surface and the other of its two refractive surfaces determines with the first mentioned refractive surface a far vision lens portion with a first focal power corrected for the aberrations which are specific to far vision, a near vision lens portion with a second higher focal power corrected for the aberrations which are specific to near vision, and between said far and near vision lens portions, an intermediate vision lens portion with a focal power which progressively varies from said first focal power to said second higher focal power, said intermediate vision lens portion being corrected for aberrations specific to vision of an object point progressively drawing nearer to the lens.

3,711,192

MOTION PICTURE CASSETTE

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

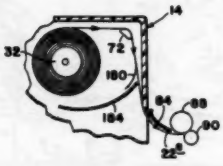
Division of Ser. No. 738,464, June 20, 1968, Pat. No. 3,655,277. This application May 24, 1971, Ser. No. 146,026

Int. Cl. G03b *23/02*

U.S. Cl. 352—78 R **10 Claims**

A compact multipurpose motion picture film handling cassette initially furnished with a strip of unexposed motion pic-

ture film of the type from which, after exposure thereof and application thereto of a processing fluid, the negative emulsion is removed to facilitate projection operations. The cassette includes an exposure station, a processing station and an emulsion removal station. Its housing is configured to be first



mounted in a camera to effect exposure of the film strip and then in a projector to facilitate treatment of the film strip with processing fluid and the subsequent removal of the negative emulsion therefrom responsive to the drive arrangement of the projector effecting advancement of the exposed film strip.

3,711,193

SHUTTER RELEASE DEVICE FOR CINE CAMERAS

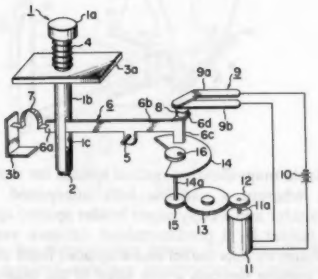
Makoto Kurasawa, Sumida-ku, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed June 9, 1971, Ser. No. 51,186

Claims priority, application Japan, June 19, 1970, 45/60875

Int. Cl. G03b *9/08*

U.S. Cl. 352—178 **3 Claims**



Upon depression of a shutter release button a detent lever is rotated under the force of a click-motion spring, and simultaneously a motor driving circuit is closed. Upon release of the shutter release button, the detent lever is returned to its initial position under the force of the click-motion spring to stop the shutter blade, and simultaneously the circuit is opened.

3,711,194

OVERHEAD PROJECTION APPARATUS

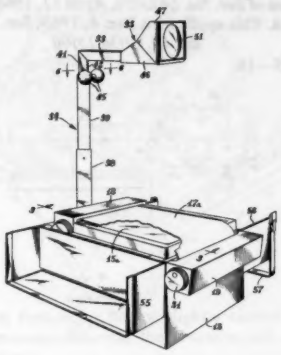
Harry Howard Wilson, Jr., 106 Wilson Street, Park Forest, Ill.

Filed Oct. 24, 1965, Ser. No. 504,598

Int. Cl. G03b *21/28*

U.S. Cl. 353—99 **3 Claims**

Projection apparatus embodying a housing having a lamp casing therein for projecting a light beam onto a reflective surface that directs the beam upwardly through a film and into a lens assembly for ultimate projection of an image onto a screen, wherein the lens assembly is carried on a telescopic



mast that may collapse into the housing and is adjustable to vary the angle of the projected image.

3,711,195

SLIDE PROJECTOR WITH AUTOMATIC MAGAZINE RESETTING MEANS

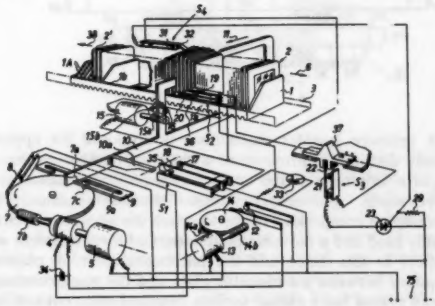
Rolf Gehlert, and Ulrich Schmidt, both of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 29, 1970, Ser. No. 85,148

Claims priority, application Germany, Oct. 31, 1969, P 19 54 792.3

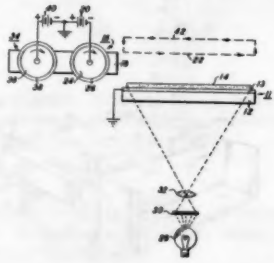
Int. Cl. G03b *23/04*

U.S. Cl. 353—116 **19 Claims**



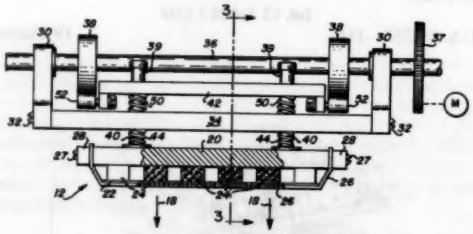
A slide projector wherein the magazine is automatically reset to a starting position in which the foremost slide of a series of slides in the magazine is located in the range of the slide changer. Such resetting is carried out by a motor whose circuit is completed by a thyristor when a detector detects the placing of the last slide of the series into the range of the slide changer and when the slide changer thereupon actuates a first two-way switch which is actuated whenever a slide is returned to its compartment. The thyristor triggers the operation of the slide changer and of the indexing mechanism for the magazine in response to actuation of a second two-way switch which is actuated on return of the magazine to its starting position.

3,711,196
IMAGE TRANSFER
Leonard M. Carreira, Webster; Ira S. Stein, and Vsevolod Tulagin, both of Rochester, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Division of Ser. No. 542,050, April 12, 1966, Pat. No. 3,565,614. This application Dec. 4, 1969, Ser. No. 879,962
Int. Cl. G03g 15/00
U.S. Cl. 355—16 12 Claims



Apparatus for electrostatically transferring images formed by photoelectrophoresis. The color balance of the images which are made up of electrically photosensitive particles on a transparent conductive substrate are modified during electrostatic transfer by exposure to electromagnetic radiation to which at least a portion of the particles are sensitive.

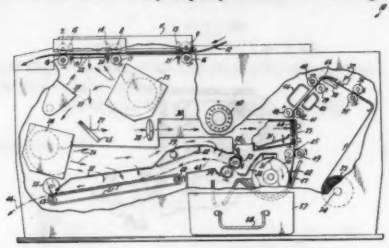
3,711,197
PRESSURE TRANSFER MECHANISM
Michael H. Paull, Mountain View, Calif., assignor to Photophysics, Inc., Mountain View, Calif.
Filed April 5, 1971, Ser. No. 130,948
Int. Cl. G03b 27/04, 15/00
U.S. Cl. 355—16 8 Claims



A pressure transfer mechanism is disclosed for applying evenly distributed pressure to a sheet of flexible photocopy paper overlying a planar surface of a photoconductor in an electrostatic photocopy image transfer station. The mechanism comprises a frame to which the photoconductor is rigidly held and a movable plate mounted for movement with respect to the frame and the photoconductor. A platen is disposed between the movable plate and the photoconductor which platen has a planar surface disposed adjacent and substantially parallel the photoconductor planar surface. A first set of compression springs is sandwiched between the movable plate and the frame. A second set of compression springs is sandwiched between the platen and the movable plate.

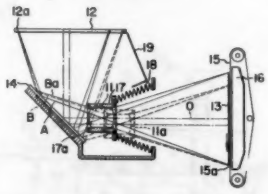
3,711,198
COPYING MACHINE HAVING EARLY COPY PAPER FEED IN MULTIPLE COPY MODE OF OPERATION
Richard D. Nordine, Oakland Park, Fla., assignor to Copystatics Manufacturing Corporation, Miami Lakes, Fla.
Filed Dec. 1, 1970, Ser. No. 94,041
Int. Cl. G03b 27/42
U.S. Cl. 355—51 33 Claims

An electrostatic copying machine of the type disclosed in Van Auken et al. application Ser. No. 30,923, filed on Apr. 22, 1970 now U.S. Pat. No. 3,677,635 and entitled "Copying Machine System". The Van Auken et al. machine includes a clutch and cam arrangement for controlling the early feed of copy paper while the original is being reverse transported in the multiple copy mode, and allows multiple copies of an original to be made very rapidly. The shortcomings of the



clutch and cam arrangement are eliminated in the present invention by the substitution of an electronic circuit. A further advantage of the electronic circuit is that it permits a relatively simple adjustment to be made for achieving perfect registration between the original and each copy sheet.

3,711,199
VARIABLE FOCAL LENGTH OPTICAL SYSTEM FOR PHOTOCOPYING MACHINE
Yutaka Koizumi, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Continuation of Ser. No. 14,288, Feb. 26, 1970, abandoned. This application Jan. 21, 1972, Ser. No. 219,885
Claims priority, application Japan, Feb. 28, 1969, 44/15575
Int. Cl. G03b 27/34
U.S. Cl. 355—57 1 Claim



A variable magnification optical system for a photocopying machine wherein a variable lens interposed between an original holder and a copy paper holder spaced apart from the original holder by a predetermined distance varies its focal length within its lens barrel and displaces itself along an optical path passing through a side edge of the original, whereby an image may be magnified or reduced in size with one side edge of a copy paper being a reference line for magnification or reduction.

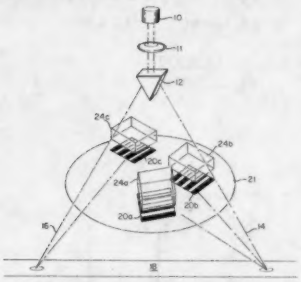
ERRATUM

For Class 356—15 see:
Patent No. 3,711,796

3,711,200
MULTIPLE-SENSOR LASER VELOCIMETER
Robert W. Maughmer, Thousand Oaks, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed Sept. 18, 1970, Ser. No. 73,305
Int. Cl. G01p 3/36
U.S. Cl. 356—28 8 Claims

A laser velocimeter system for measuring the relative three-dimensional vectorial velocity between a carrier and the surface over which the carrier moves. Light energy reflected from laser illuminated portions of the surface is utilized to

compute the velocity of the carrier along each of three orthogonal coordinates. Different portions of the reflected energy are received by three light sensitive detectors after the energy first passes through coplanar optical gratings—a separate grating being associated with each of the light sensitive detectors. The output signals of the detectors are modulated by the effects of the gratings; and these last mentioned signals are processed by frequency tracker units and by a computer to provide signals representative of the relative vectorial velocity.

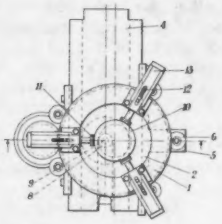


3,711,201

APPARATUS FOR DETERMINING TRACES OF ELEMENTS IN MASSIVE SAMPLES BY OPTICAL EMISSION SPECTROMETRY

Stefano Sturlese, Rome; Giovanni Battista Quaglia, Genova, Rome, and Bartolomeo Morello, Rome, all of Italy, assignors to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

Filed May 20, 1971, Ser. No. 145,337
Claims priority, application Italy, June 5, 1970, 51198 A/70
Int. Cl. G01j *3/30*
U.S. Cl. 356—86 **6 Claims**



Apparatus for determining traces of elements in massive samples by optical emission spectrometry comprises an attachment to a Petrey table which is a rotatable sample holder that rotates eccentric to and in gas-tight relation relative to the Petrey table, so that the path of the projection of the electrode on the sample is circular. The material of the sample holder is a self-lubricating material, e.g. polytetrafluoroethylene. The sample holder carries resilient clamps for centering the sample relative to the sample holder.

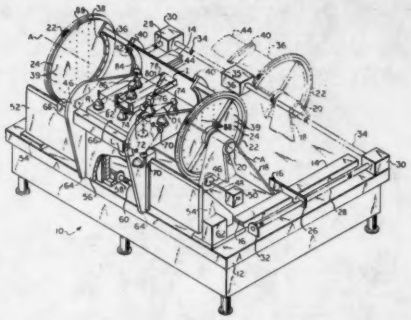
3,711,202

HOLOGRAPHIC TESTING APPARATUS

Hugh M. Rush, Coronado, and Milan E. Gerard, Chula Vista, both of Calif., assignors to Rohr Corporation, Chula Vista, Calif.

Filed Dec. 8, 1969, Ser. No. 883,142
Int. Cl. G01b *9/02*; G02b
U.S. Cl. 356—109 **6 Claims**

Components of a holographic system are mounted for movement as a unit along a horizontal path of travel. Means for holding an object to be holographed, including a pair of trunnions having a pivotal axis parallel to said line of travel, are mounted for movement to and from the holographic system. By selectively moving the holographic system and the object holding means, and pivotally adjusting the object as necessary, the object can be holographically scanned quickly. Fixtures for curved objects can present both surfaces thereof for scanning. A fixture for flat or slightly curved objects is mounted for movement across the trunnion axis as well as pivoting thereabout.

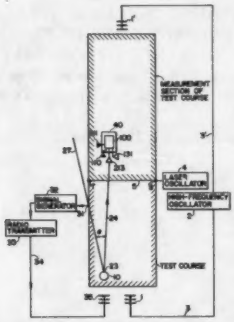


3,711,203

VEHICULAR TRACK MEASURING APPARATUS

Kazuo Sato, and Takashi Aoki, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Nov. 23, 1970, Ser. No. 91,764
Claims priority, application Japan, Nov. 25, 1969, 44/93936
Int. Cl. G01b *11/26*
U.S. Cl. 356—152 **17 Claims**



Apparatus for measuring a track of a vehicle running on a test course, having: means for generating a voltage proportional to a distance along the longitudinal axis of the course between a track measurement starting plane on the course and the vehicle by generating standing radio waves above the course and counting the number thereof; and means for generating a voltage proportional to an angle contained by a reference vertical plane with respect to the course and another vertical plane with respect to the course intersecting the reference vertical plane and the vehicle by scanning the course rotatively with a laser beam from the line of intersection of these two vertical planes and measuring the time required for scanning the angle.

3,711,204

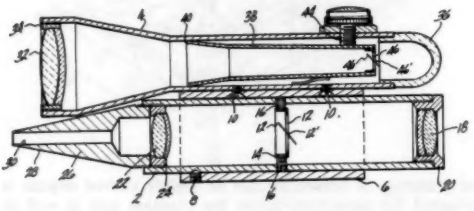
OPTICAL SIGHT ALIGNER

William F. Steck, III, El Paso, Tex., assignor to W. R. Weaver Company

Filed Oct. 6, 1971, Ser. No. 187,023
Int. Cl. G01b *11/26*
U.S. Cl. 356—153 **9 Claims**

A device for aligning the aiming point of a sight with the axis of a gun barrel includes a housing containing two aiming

points which are capable of being made coincidental. Collimating means is focussed on one of the aiming points of the device, and image inverting and reverting optical means is focussed on the other of the aiming points. Means is provided for mounting the device on the muzzle of a gun so as to permit universal pivotal movement of the device with respect to the gun and so that the bore of the gun barrel can be viewed through the inverting reverting optical means through the gun



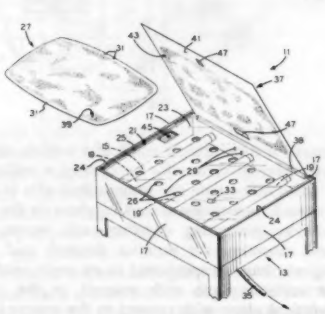
muzzle. Once the inverting reverting optical means is centered on the axis of the gun barrel, the device is made immobile with respect to the gun, and the collimated aiming point of the device is viewed through the sight. The aiming point of the sight is then made coincidental with the collimated aiming point of the device so as to become aligned with the gun barrel axis.

3,711,205

INSPECTION METHOD AND APPARATUS FOR DETECTING OVERSIZED APERTURES IN RELATIVELY THIN SHEETS OF OPAQUE MATERIAL

Alexander Stuart Tuik, Alan David Douglas, and Ivan L. Ericson, all of Towanda, Pa., assignors to GTE Sylvania Inc.

Filed July 22, 1971, Ser. No. 165,193
Int. Cl. G01b *11/00*
U.S. Cl. 356—162 **10 Claims**



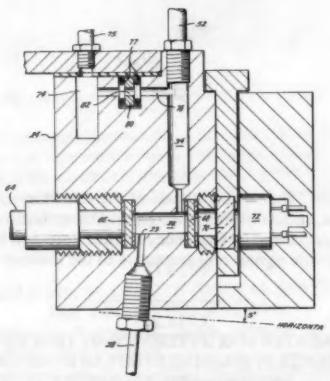
An inspection method and apparatus for detecting oversized apertures in thin sheets of opaque material utilizing a light source positioned in an encasement means having a floor and a plurality of upstanding walls about the perimeter of the floor. Each of these walls has a ledge formed thereon for supporting a translucent enclosure member having a predetermined pattern of openings spaced therein. As a relatively thin sheet of apertured material is positioned on the surface of the enclosure member according to alignment pins on the surface, a comparator means, hingedly affixed to one side of the enclosure member and comprising a relatively thin sheet of transparent material having an opaque pattern formed thereon corresponding to the aperture pattern desired for the opaque material, is lowered to cover the opaque material. Oversized apertures are detected if light is emitted through the adjoining comparator means and opaque material.

3,711,206

OPTICAL ANALYZING MEANS FOR AUTOMATIC CHEMICAL TESTING APPARATUS

John Joseph Moran, Houston, Tex., assignor to Hycel, Inc., Houston, Tex.

Filed Jan. 19, 1971, Ser. No. 107,737
Int. Cl. G01n *21/06, 21/22*
U.S. Cl. 356—201 **5 Claims**



An optical analyzing means for use with an automatic chemical testing apparatus which is positioned at the readout station including a readout block having a plurality of elongate testing chambers of a predetermined size which are inclined slightly from the horizontal for draining and including a generally vertically passageway connected adjacent the lower portion of the chambers for insertion into the reaction tubes on the testing apparatus for aspirating samples from the tube for testing and expelling the tested contents after optically analyzing the sample. A single light source spaced from the testing chambers whereby the heat of the light source will not adversely affect the contents of the testing chambers and a plurality of fiber optic tubes each of which is connected to the light source and to one of the testing chambers for passing light through the testing chambers for optical analysis. An air manifold connected to each of the testing chambers controlled by valve means between the manifold and the testing chambers for flushing air through the testing chambers for expelling the contents of the testing chambers after the test has been completed.

3,711,207

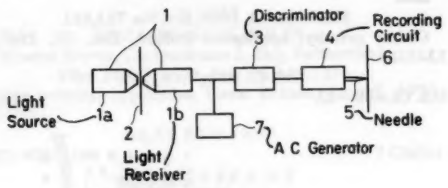
ISODENSITY RECORDING SYSTEM

Isao Sakurai, and Minoru Okumura, both of Hachioji-shi, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1970, Ser. No. 98,555
Claims priority, application Japan, Dec. 24, 1969, 44/103403
Int. Cl. G01n *21/06, 21/22*
U.S. Cl. 356—202 **1 Claim**

An improved density recording system is described in which a material carrying a density pattern thereon is scanned two-dimensionally to measure its density, the output of the density measurement section being led to a discriminator circuit to discriminate predetermined voltages, and thereby isodensity curves are plotted, similarly to that disclosed in the copending U.S. Pat. application Ser. No. 45,952. The improvement exists in that an alternating voltage having a waveform such as sinusoidal, rectangular, o saw-tooth waveform or the like having a total amplitude larger than the width of the blind zone set up by said discriminator circuit is superposed on the output of said density measurement section, whereby the cut-away sec-

tions in isodensity curves which would occur at the curve sections which are parallel to the direction of line scanning in the case of the prior art density recording systems may be obviated and made continuous.



3,711,208

DOUBLE BEAM OPTICAL DENSITOMETER

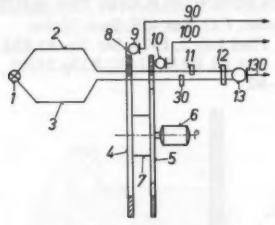
Antonio Abbondio, Oetwil/Zurich, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed March 30, 1971, Ser. No. 129,540

Claims priority, application Switzerland, April 2, 1970, 4886/70

Int. Cl. G01n *21/06, 21/22*

U.S. Cl. 356—202 **14 Claims**



The invention relates to a densitometer in which the slope of the density curve is adjustable. The densitometer provides a rotatable grey wedge disc and a rotatable chopper disc disposed so that a measuring light beam can pass through both discs and an object to be subjected to measurement and a reference light beam can pass only through the chopper disc. Both beams then image on a photoelectric detector which feeds corresponding signals to a comparator. When a starting position on the rotatable grey wedge disc passes a predetermined point, a circuit is opened which permits the comparator to connect a counter to a counting pulse transmitter, provided also that a predetermined relationship, for example equality, exists between said signals. The pulse repetition rate of the counting pulse transmitter is preferably controlled in dependence upon the rotational speed of the chopper disc and the slope of the density curve can be varied by adjusting the ratio between the rotational speed of the grey wedge disc and the pulse repetition rate. Where the pulse repetition rate is dependent upon the speed of the chopper disc, this adjustment is effected by a variable speed gear between the discs.

3,711,209

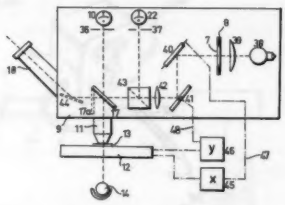
APPARATUS FOR PHOTOMETRIC ANALYSIS INCLUDING MEANS FOR SCANNING

Torbjorn Oskar Caspersson, Stockholm, and Gosta Mattias Lomakka, Sollentuna, both of Sweden, assignors to Incentive Research & Development AB, Bromma, Sweden

Filed March 8, 1971, Ser. No. 121,814

Int. Cl. G01n *21/30*

U.S. Cl. 356—203 **4 Claims**



A photometric analysis of a specimen is carried out by means of a scanning and integrating apparatus which comprises a main phototube, a specimen holder, driving means for producing relative movement between the main phototube and the specimen holder in accordance with a predetermined scanning path, and an integrator for integrating the electrical output signal from the main phototube. A diaphragm has an aperture which represents a predetermined measuring field. Lamp and lens means are provided for producing an image of the aperture. An auxiliary phototube is provided for registering said image. The driving means are arranged to actuate members for producing a relative movement between said image and said auxiliary phototube, and said relative movement is in accordance with the predetermined scanning path. The auxiliary phototube actuates an electronic gate which switches off the signal from the main phototube to the integrator when the auxiliary phototube does not receive any light from the image of the aperture.

3,711,210

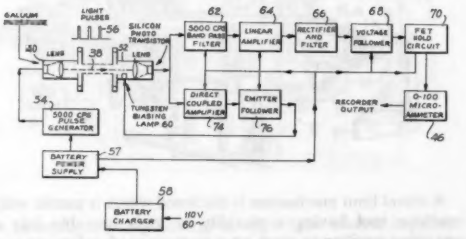
SMOKE METER

Richard Krukowski, 39 Maple Street, Chatham, N.J.

Filed July 6, 1971, Ser. No. 159,595

Int. Cl. G01n *21/26*

U.S. Cl. 356—207 **12 Claims**

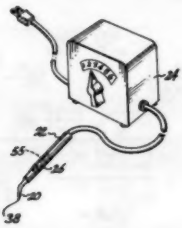


A smoke meter where smoke flows between a light source and a photosensitive element which receives light from the light source, so that the extent to which light is received by the photosensitive element will be influenced by the opacity of the smoke. The light source is electrically connected to a meter which directly gives a reading of the opacity of the smoke. In order to compensate for any fluctuations in light other than the light travelling from the light source to the photosensitive element, a compensating lamp is provided to maintain at the photosensitive element a constant light level by compensating automatically for any fluctuations in light other than the light travelling from the light source to the photosensitive element, so that the latter will respond only to variations in light from the light source to provide an accurate indication of the opacity of the smoke.

3,711,211
WAX SHAPING TOOL

William E. Garrison, Seattle, Wash., assignor to The Magic Circle Corp., Seattle, Wash.

Filed Feb. 1, 1971, Ser. No. 111,414
Int. Cl. B43k *8/00*; A46k *11/08*
U.S. Cl. 401—2 1 Claim

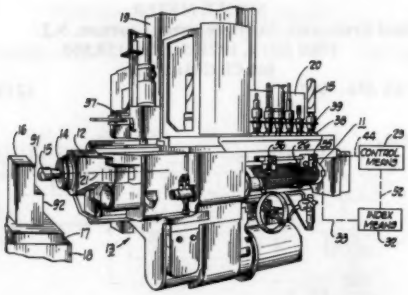


A tool or instrument for shaping wax in desired patterns which carries a tip that is made from a thermo-conductive material conforming in a diminishing mass fashion and ending into a point. The tip includes a wax storage area connected to the point by a slot or passageway. Transport of fluid wax between point and storage area, and vice versa, is obtained by gravity and capillary action respectively in conjunction with the effect of heat involved by the diminishing mass.

3,711,212
TRAVEL LIMIT MECHANISM AND METHOD

Kermit T. Kuck, Sidney, Ohio, assignor to The Monarch Machine Tool Company

Filed Feb. 19, 1971, Ser. No. 116,931
Int. Cl. B23b *39/08*, *49/00*
U.S. Cl. 408—3 35 Claims

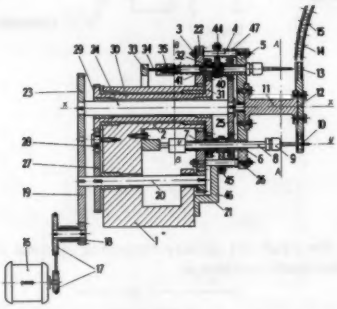


A travel limit mechanism is disclosed which is usable with a machine tool having a plurality of tools movable into an operative position to work on a workpiece. A reference position is first established at which the tip of a first tool clears a workpiece and a first dog just actuates a switch. This establishes a first tool-limit position. THe tool is removed from the operative position and placed in an adjustable holder with the tip of the tool abutting a tool tip locator and the tool tip locator abutting the first dog. A second tool-limit position then may be easily set by placing a second tool in the adjustable holder and moving the tool tip locator into abutment with the tip thereof and also into abutment with a second dog of a second set of dog and switch means. Depth stops for setting depth of cut of the tools may also be readily set using the same mechanism. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,711,213
MULTIPLE-SPINDLE ARRANGEMENT FOR TAPPING HOLES IN SMALL WORKPIECES, NUTS IN PARTICULAR

Franciszek Grygierczyk, and Zygmunt Falkowski, both of Czechowice-Dziedzice, Poland, assignors to Fabryka Sprzetu Elektrotechnicznego "Kontakt", Czechowice-Dziedzice, Poland

Filed Dec. 13, 1968, Ser. No. 783,511
Claims priority, application Poland, Dec. 27, 1967, P. 124318
Int. Cl. B23g *1/08*, *1/20*
U.S. Cl. 408—43 4 Claims

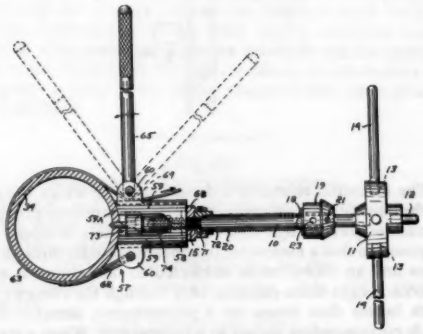


A multiple-spindle arrangement for tapping holes in small workpieces and comprising: a spindle feed mechanism, a mechanism for reversing spindle rotation, a rotary head with working spindles slidably seated therein, and a holder disk secured to said head and provided on its periphery with sockets coaxial with the spindles for receiving therein the workpieces to be tapped.

3,711,214
DEVICE FOR USE IN TURNING OPERATIONS ON PIPE ENDS AND IN BORING HOLES IN THE SLIDES THEREOF

Alfred J. Cloutier, P.O. Box 455, Saco, Maine

Filed July 2, 1970, Ser. No. 51,822
Int. Cl. B23b *41/00*; B23p *23/00*
U.S. Cl. 408—92 6 Claims



Devices are disclosed for performing a wide range of operations on pipes including the turning of male ends and forming annular grooves thereon, cutting off lengths, or providing threaded holes in the side thereof. Each device includes a basic part, attachments including various tools, and clamps. The basic part comprises a threaded shaft provided with a head and a threaded sleeve provided with a head and slidable on the shaft. Where the device is to be clamped to the interior of a pipe, a wedge-actuated clamp is threaded on the sleeve and operated by rotating the sleeve and an attachment with the appropriate tool is secured to the shaft head for engagement with the exterior of the pipe. Where the tool is to be ad-

vanced as the shaft is turned, a nut is provided that may be threaded on the shaft and has a threaded counterbore enabling it also to be attached to the end of the sleeve. Where a hole is to be formed in the side of the pipe, the nut is part of a clamp secured about the pipe with its axis at right angles thereto and the tool is secured axially to the end of the shaft.

3,711,215

DRILLING BOLT HOLES

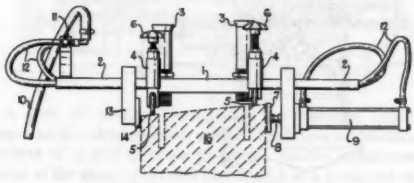
John Vincent Brown, Gartenstrasse 2, Zug, Switzerland

Filed June 3, 1971, Ser. No. 149,733

Claims priority, application Great Britain, June 5, 1970, 27,331/70

Int. Cl. B23b *49/00*

U.S. Cl. 408—108 **7 Claims**



Apparatus for use in locating and aligning holes for bolts in bridge parapets and the like consists of a flat plate bearing adjustable guides, adjustable locating means and power-operated clamping means.

3,711,216

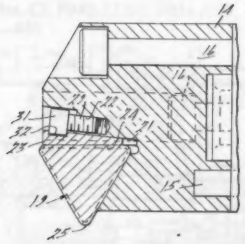
TOOL BIT ADJUSTING DEVICE

Eric P. Zurcher, Hasbrouck Heights, N.J., assignor to Standard Tool & Manufacturing Co.

Filed June 25, 1971, Ser. No. 156,846

Int. Cl. B23b *29/34*

U.S. Cl. 408—153 **5 Claims**



An adjustable wedge for a tool bit has a sloping face on a cylindrical body which is mounted in a cylindrical aperture where it can rotate. The opposite side of the body has a notch engaged by the head of a screw for adjusting the wedge axially within the aperture. A flat triangular bit is retained on a seat by a finger to have a corner tie exposed for cutting. By having the sloping face of the wedge engage the edge of the bit opposite to that of the tip being used, the bit can be adjusted outwardly by the movement of the wedge inwardly of the aperture by the screw. The bit usually is provided with sloping edges which converge to provide relief to the cutting tips and the sloping face of the wedge will cause the wedge to rotate so that the sloping face will be coplanar with the sloping bit edge.

3,711,217

DRILL WITH A HARD METAL INSERT

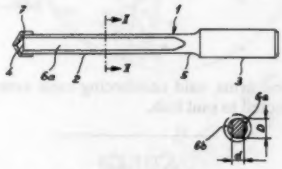
Wilfried Imelmann, Vaduz, and Siegfried Benedic, Eschen, both of Liechtenstein, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed June 10, 1971, Ser. No. 151,823

Claims priority, application Germany, June 12, 1970, P 20 29 047.5

Int. Cl. B23b *51/00*

U.S. Cl. 408—226 **2 Claims**



For obtaining the maximum effectiveness from an axially extending drill with a hard metallic insert positioned on its drill end and a pair of axially extending oppositely spaced surfaces formed in its cylindrically shaped shaft, the ratio of the maximum diameter of its shaft to the dimension between the oppositely disposed surfaces is in the range of 1 : 0.7 to 1 : 0.8.

3,711,218

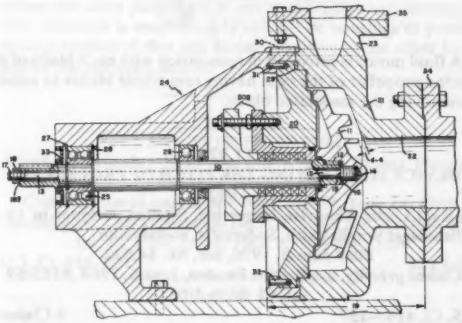
CENTRIFUGAL PUMP WITH OPEN TYPE IMPELLER

George Wm. Kennel, Flushing, and Gerald Ornstein, Riverdale, both of N.Y., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Jan. 11, 1971, Ser. No. 105,156

Int. Cl. F01d *5/02*; **F04d** *29/02*

U.S. Cl. 415—131 **14 Claims**



A centrifugal pump having an open type bladed impeller, featuring an impeller shaft assembly which as such comprises a hollow impeller shaft, a tie rod within the impeller shaft, and an impeller with open blades connected to the tie rod so as to be axially adjustable relative to the shaft and thus relative to the pump housing through manipulation of the tie rod at the free end of the shaft.

3,711,219

FAN CONNECTING REINFORCING CAP TO HUB

Karl H. Strick, Chatham, Ontario, Canada, assignor to Fram Corporation, East Providence, R.I.

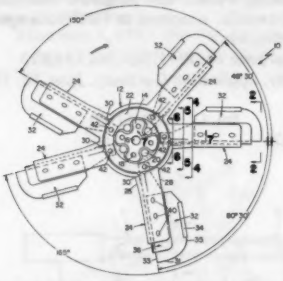
Filed Sept. 20, 1971, Ser. No. 181,664

Int. Cl. F04d *29/38*

U.S. Cl. 416—132 **24 Claims**

A fan having blades secured on arms which project radially

from a central hub and reinforcing caps fixedly connected to



the blades and arms, said reinforcing caps extending to and fixedly connected to said hub.

3,711,220

MARINE PROPELLER WITH REMOVABLE BLADES

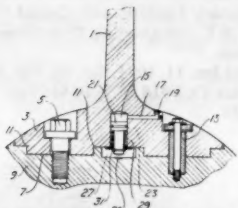
Carl-Gustaf Ramback, and Nils Olof Ericsson, both of Kristinehamn, Sweden, assignors to Aktiebolaget Karlstads Mekaniska Werkstad, Karlstad, Sweden

Filed Feb. 19, 1971, Ser. No. 116,837

Claims priority, application Sweden, April 10, 1970, 4912/70

Int. Cl. B63h *1/20*

U.S. Cl. 416—146 **5 Claims**



A fluid motor is provided in association with each blade of a marine propeller of the type having removable blades to assist in removing the associated blade.

3,711,221

DEVICE FOR VARYING THE PITCH OF PROPELLER BLADES

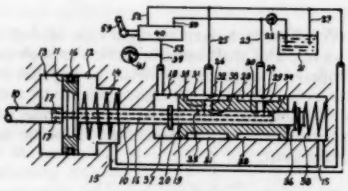
Bo Karl Loritz Almqvist, Hagersten, Sweden, assignor to Aktiebolaget Scania Vabis, Sodertalje, Switzerland

Filed June 8, 1970, Ser. No. 44,522

Claims priority, application Sweden, June 6, 1969, 8105/69

Int. Cl. B63h *3/08*

U.S. Cl. 416—157 **6 Claims**



A device for varying the pitch of the propeller blades in an engine driven boat. A hydraulic motor having a work cylinder with a working piston imparts movements to the propeller blades and to an auxiliary cylinder through a mechanical transmission member. The auxiliary cylinder includes a follow-up slide which cooperates with the transmission member. The transmission member has inlet and outlet openings and a channel to conduct a pressure medium to and from the working cylinder. The follow-up slide has inlet and outlet openings which cooperate with the openings in the transmission member so that control of the position of the working piston is determined by the position of the follow-up slide.

3,711,222

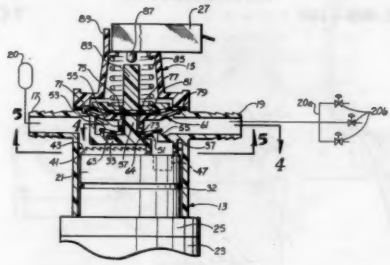
PUMPING SYSTEM

Ezra D. Hartley, 2700 Jalmia Drive, Los Angeles, Calif.

Filed Jan. 11, 1971, Ser. No. 105,544

Int. Cl. F04b *49/00*

U.S. Cl. 417—44 **10 Claims**



A pumping system comprising a pump, a drive mechanism for driving the pump, and a differential pressure switch responsive to the pressure of the fluid in a sensing zone on a discharge side of the pump for turning the pump on and off. A restricted fluid passage is interposed between the pump discharge and the sensing zone.

3,711,223

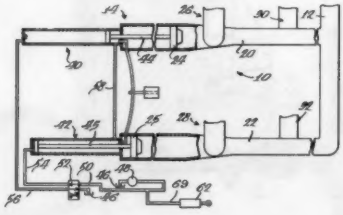
HYDRAULIC CONTROL SYSTEM FOR CONCRETE PLACER

Aaron M. Schaible, deceased, late of Rochester, Wis.; by James F. Bremer, special administrator, Waterford, and Harry W. Davidson, Burlington, both of Wis., assignors to J. I. Case Company

Filed Jan. 11, 1971, Ser. No. 105,265

Int. Cl. F04b *9/08*

U.S. Cl. 417—342 **11 Claims**



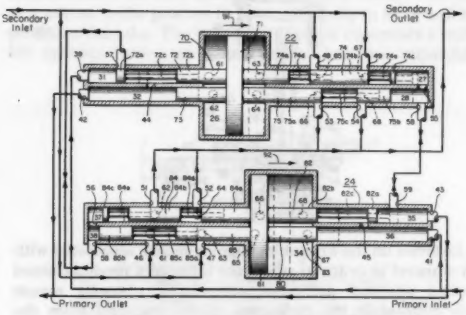
A concrete pumping apparatus having a pair of fluid rams cooperating with conduits for delivering material through the conduits by supplying pressured fluid from a hydraulic control circuit to the rams. The hydraulic control circuit includes a pump delivering fluid to the rams at varying flow rates and pressures with a member in the pump positionable to a plurality of positions to adjust the flow rate of the fluid. The member is adjustable by a manual control means and automatic compensator means communicating with the output of the pump with an element of the compensator means positioned as a function of the pressure of fluid from the pump. A linkage means is interposed between the element and the member to move the member at varying inclements as the pressure of fluid is increased.

3,711,224

FLUID POWERED EXPANSION ENGINE

Wendell E. Maudlin, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 16, 1971, Ser. No. 115,507
Int. Cl. F04b *17/00, 35/00*
U.S. Cl. 417—344 19 Claims



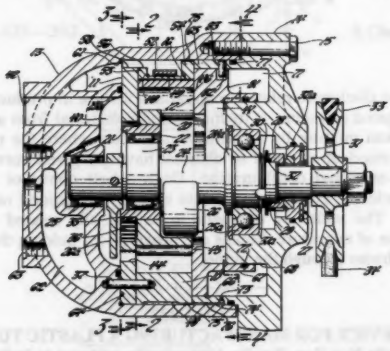
A pair of similar free piston mechanisms oscillate, in response to a driving fluid, within respective multi-chambered cavities of a pair of cross coupled cylinder structures. They travel at the same speed but one-fourth of a cycle out of phase. Each piston-cylinder system is double acting and provides the necessary intake and exhaust valving for the other. No mechanical interconnections are needed between the two piston mechanisms. In the disclosed embodiment the expansion engine is incorporated in a fluid transformer having a primary flow circuit, which includes chambers of both cavities, and a secondary flow circuit also comprising chambers of both cavities. Driving fluid in the primary circuit actuates both of the piston mechanisms and they in turn effect pumping of a driven fluid through the secondary circuit.

3,711,225

EPITROCHOIDAL COMPRESSOR

William H. Kolbe, Birmingham, and Alexander J. Sagady, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 79,194, Oct. 8, 1970, Pat. No. 3,671,154. This application Aug. 26, 1971, Ser. No. 175,076
Int. Cl. F04b *23/00*; F01c *1/02, 19/08*
U.S. Cl. 417—440 7 Claims



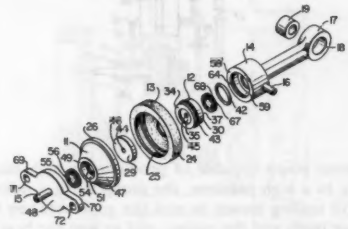
A compressor of the epitrochoidal rotor type has a rotor with N hollow lobes and a stator housing with N+1 lobes, a discharge and inlet side plate on one side of the rotor and a piston side plate on the opposite side of the rotor loaded against the rotor by fluid pressure from the discharge cavity of the compressor to effect sealing of the rotor between these side plates, the piston side plate being adapted to be rotated out of engagement with the rotor whereby the piston side plate also operates as a bypass clutching mechanism to control on and off operation of the compressor. The compressor housing also includes a discharge muffler formed therein.

3,711,226

PNEUMATIC PUMP CONSTRUCTION AND METHOD FOR MAKING THE SAME OR THE LIKE

Kenneth G. Kreuter, Goshen, Ind., assignor to Robertshaw Controls Company, Richmond, Va.

Continuation of Ser. No. 805,645, March 10, 1969, abandoned. This application Feb. 25, 1971, Ser. No. 119,012
Int. Cl. F04b *43/04*
U.S. Cl. 417—480 10 Claims



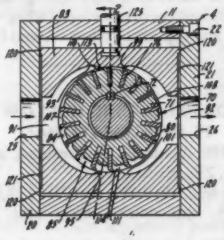
A pneumatic pump construction having an outer peripheral means of a flexible diaphragm interconnected to either an inlet housing or an outlet housing and having an inner peripheral means thereof interconnected to the other of the housings whereby the diaphragm interconnects the housings together to define a pumping chamber therebetween and permits relative movement of said housings to change the volume of said chamber for a pumping action of the pump construction, one of the housings comprising two parts having the inner peripheral means of the diaphragm stacked therebetween and being ultrasonically welded together to secure the inner peripheral means to the diaphragm thereto. A drive member is snap-fitted to one of the housings to provide driving motion of that one housing relative to the other housing for the pumping action.

3,711,227

VANE-TYPE FLUID PUMP

Albert A. Schmitz, 5217 Durand Avenue, Mount Pleasant, Wis.

Continuation-in-part of Ser. No. 739,359, June 24, 1968, abandoned. This application Dec. 22, 1969, Ser. No. 886,982
Int. Cl. F01c *21/16*; F03c *3/00*; F04c *15/04*
U.S. Cl. 418—31 12 Claims

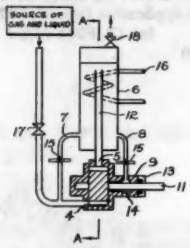


A vane-type pump in which the vanes are hydrostatically balanced whereby they are urged outward only by centrifugal force. The cam ring sealing surfaces rise in the sealing zones to assure contact with the vanes.

3,711,228
VACUUM PUMP

Norman Leslie Foley, Clovercrest, Modbury, Australia, assignor to Auscoteng Pty. Ltd., Wayville, Australia

Filed Sept. 9, 1970, Ser. No. 70,823
Claims priority, application Australia, Sept. 11, 1969, 60783/69
Int. Cl. F01c 21/04, 21/06; F04c 15/00
U.S. Cl. 418—98 2 Claims

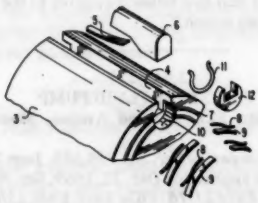


A gaseous pump capable of producing a high vacuum or delivering to a high pressure, the pump being a normal gear pump with sealing means to seal the gaps between the gear faces, gear teeth and the casing, and to seal the bearing supporting the drive shaft. Sealing liquid is recirculated from a liquid trap at the outlet to the inlet of the pump and to the bearing supporting the drive shaft.

3,711,229
CORNER SEAL SPRING FOR A ROTARY PISTON ENGINE

Noriyuki Kurio, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Aki-gun, Hiroshima-ken, Japan

Filed May 25, 1971, Ser. No. 146,759
Claims priority, application Japan, May 25, 1970, 45/51649
Int. Cl. F01c 19/02; F03c 3/00; F04c 27/00
U.S. Cl. 418—121 2 Claims



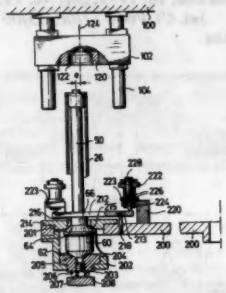
A corner seal spring urging a corner seal within a groove in each apex portion of a rotary piston of a rotary piston engine for sealing between the rotary piston and the adjacent end wall. The spring is made of a wire spring, formed into a U-shape with its both ends bent outwardly when viewed from the front and twisted into a γ-shape when viewed from the side.

3,711,230
MACHINE FOR PRODUCING HOLLOW BODIES OF PLASTICS MATERIAL

Karl Magerle, 8700 Kusnacht, Switzerland, assignor to Tubmatic Inter AG, Zug, Switzerland

Filed Aug. 17, 1971, Ser. No. 172,502
Claims priority, application Switzerland, Aug. 21, 1970, 12521/70
Int. Cl. B29d 23/00
U.S. Cl. 425—126 6 Claims

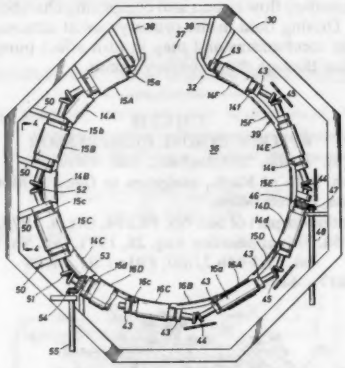
A machine for producing hollow bodies of plastics material, comprising: a turntable which has a plurality of mandrels distributed in the peripheral direction, at least one working unit which cooperates with one mandrel at a time in a predetermined rotational position of the turntable and which is adapted to move substantially parallel to said mandrel, each mandrel having an end portion which is provided with spherical surfaces and which engages and is swivellable in a bearing part fastened on the turntable, aligning means associated with each mandrel in order to adjust the latter to a predetermined swivelled position, and resiliently elastic restoring means which counteract the deflection of the mandrel from the predetermined swivelled position.



3,711,231
URETHANE TUNNEL MOLD

Samuel Chess, and Lawrence C. Porter, both of Palos Verdes, Calif., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 30, 1970, Ser. No. 85,640
Int. Cl. B29d 27/04
U.S. Cl. 425—127 12 Claims



The disclosure relates to apparatus for use in production of elongated elements of foamed cellular material from a liquid reaction mixture by a continuous process where the mold is comprised of a tunnel or channel having a given curvilinear cross-sectional configuration. Endless belt conveyor means encircle the channel and are in side-by-side guided relationship. The width of the belts is functionally related to the degree of curvature. Means are provided for guiding the belts lengthwise through the tunnel.

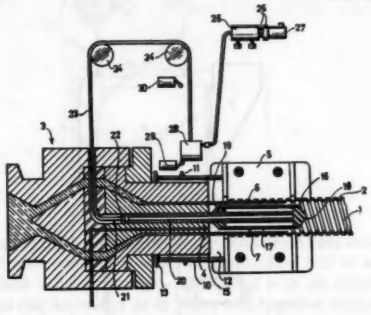
3,711,232
DEVICE FOR MANUFACTURING A PLASTIC TUBE

Cornelis Van Zon, Zwolle, Netherlands, assignor to Industriele Onderneming Wavin N.V., Zwolle, Netherlands

Filed Oct. 24, 1969, Ser. No. 869,206
Claims priority, application Netherlands, Oct. 13, 1968, 6815449; April 24, 1969, 6906380
Int. Cl. B29d 23/03, 23/04
U.S. Cl. 425—150 9 Claims

A device for manufacturing a plastic tube with transverse or helical grooves comprised of an extruder, and a die consisting

of two movable halves forming a mold cavity with a ribbed profile through which the tube is extruded. The halves of the die are each provided with semi-circular elongated heating elements or members for heating a region between the opening of the extruder and the beginning of the die forming the mold cavity. One embodiment of the present invention uses an inflatable member disposed interior to the tube which when inflated forces the tube outwardly causing portions of the tube to conform to the grooves in the mold cavity to form a ribbed profile in the tube. The inflatable member comprises a movable cylinder having an inflatable wall and two expandable



spaced apart end discs. Another embodiment of the present invention comprises an inflating member having two spaced apart expandable closing discs which, when expanded, communicate with the interior wall of the plastic tube thus, creating a high-pressure chamber therein. A spring-loaded valve for controlling the ingress and egress of the inflating medium, such as compressed air, into and out of the pressure chamber is situated between the two closing discs. The inflating medium trapped in the chamber under high pressure exerts a force on the tube thus, displacing portions of the tube into the ribbed profile in the mold cavity to form transverse or helical grooves in the tube.

3,711,233

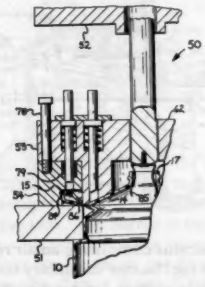
PLASTIC BOTTLE MANUFACTURE

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Jan. 4, 1971, Ser. No. 103,660

Int. Cl. B29d *23/03*

U.S. Cl. 425—302 **9 Claims**



A blow molding apparatus for forming containers from organic plastic material wherein the container is formed with an expanded radially extending wall at the finish of the container so that the flash and moile material can be removed by a die cut or blanking operation of the apparatus.

3,711,234

APPARATUS FOR THE PRODUCTION OF PRECISION CASTINGS OR INJECTION-MOULDINGS FROM PLASTICS

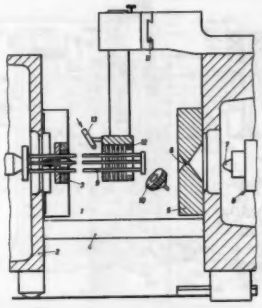
Walter Damsky; Siegfried Joisten, both of Krefeld, and Janos Sajben, Krefeld-Gartenstadt, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 718,841, April 4, 1968, abandoned. This application Nov. 9, 1970, Ser. No. 88,146

Claims priority, application Germany, April 19, 1967, F 52177

Int. Cl. B29c *7/00*

U.S. Cl. 425—307 **15 Claims**



Apparatus for production of an axially elongated plastic article of precise dimensions about its axially extending periphery. The article is first injection moulded in oversize form. It is then injected from the mould by an ejector which also advances the cast oversize article through a multistage cutting tool which cuts material from the periphery of the article to reduce it from the oversize condition to said precise dimensions.

3,711,235

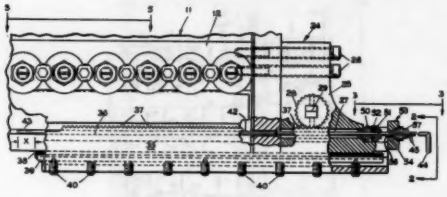
EXTRUSION DIE DECKLE MEANS

William S. Bunte, Somerville, and Lino E. DeGasperis, Clinton, both of N.J., assignors to Egan Machinery Company, Somerville, N.J.

Continuation-in-part of Ser. No. 154,138, June 17, 1971, which is a continuation-in-part of Ser. No. 108,459, Jan. 21, 1971, Pat. No. 3,694,132. This application Nov. 10, 1971, Ser. No. 197,271

Int. Cl. B29d *7/04*

U.S. Cl. 425—466 **12 Claims**



An extrusion die having a discharge orifice in the form of a relatively long narrow slot and adapted to extrude a film or sheet of a flowable plastic material. The die is equipped with known external deckle means adjustably positioned along the outer end of the discharge orifice and improved internal deckle means adjustably positioned along the inner end of the discharge orifice. The external and internal deckle means are adjustable in unison or separately, as desired, along corresponding ends of the discharge orifice. The die and the external and internal deckle means are so constructed and ar-

ranged as to effectively regulate and control both the width and the thickness of a plastic film or sheet that is extruded from the die.

3,711,236

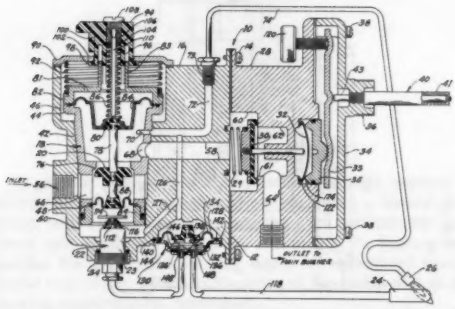
GAS BURNER CONTROL DEVICE WITH LOW PRESSURE CUTOFF

Howard R. Kinsella, St. Louis County; John J. Love, St. Louis; Carl A. Smith, Lemay, and Charles D. Visos, Manchester, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 2, 1971, Ser. No. 168,095

Int. Cl. F23q *9/08*

U.S. Cl. 431—53 **10 Claims**



A gas burner control device including a biased closed, electromagnetically operated, fuel cutoff valve dependent upon electrical energy generated by a pilot burner-heated thermocouple to hold it open, and a biased open pressure responsive switch controlling the thermocouple-cutoff valve circuit, the switch being dependent upon a predetermined minimum gas supply pressure to close it and hold it closed, whereby either a drop in fuel supply below a predetermined minimum pressure or the extinguishment of the pilot flame effects closure of the fuel cutoff valve.

3,711,237

IGNITION AND CONTROL DEVICES FOR FUEL BURNERS

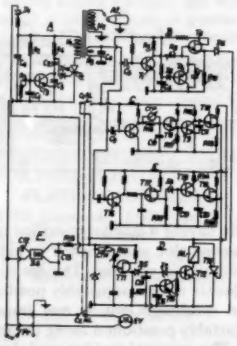
Eric Jaulmes, Paris, France, assignor to Ateliers De La Motobecane, Pantin, France

Filed Aug. 2, 1971, Ser. No. 168,292

Claims priority, application France, March 9, 1971, 7108138

Int. Cl. F23n *5/12*

U.S. Cl. 431—69 **18 Claims**



The subject matter of the disclosure relates to a control device which is an improvement on French Pat. No. 1,598,786 wherein the ignition and detection of the presence or absence of a flame are both effected at a relatively low frequency (less than 1 Hz) whereas according to the improvement, means are provided to effect the ignition at a relatively higher frequency and the detection at a relatively low frequency. Additional safety means may be included.

3,711,238

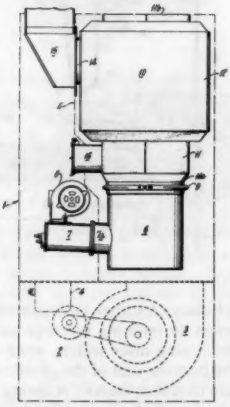
VORTEX COMBUSTION CHAMBER

Julian H. Dancy; William O. Wiley, and Thomas L. Tyson, all of Richmond, Va., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 29, 1970, Ser. No. 102,345

Int. Cl. F23c *5/18*

U.S. Cl. 431—173 **2 Claims**



This invention relates to a combustion chamber as applied in a preferred embodiment to a w:rm air heater wherein a vortex is provided by having the air intake means enter eccentrically with respect to the longitudinal axis thereof, the chamber having a main combustion zone and a post combustion zone separated by a plate orifice.

3,711,239

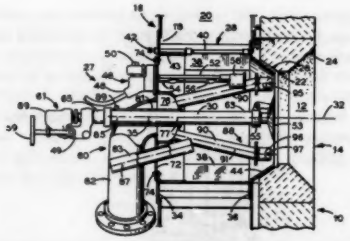
FUEL BURNER

Merle Myron Clark, Barberton, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed July 29, 1971, Ser. No. 167,193

Int. Cl. F23m *5/00*

U.S. Cl. 431—188 **12 Claims**



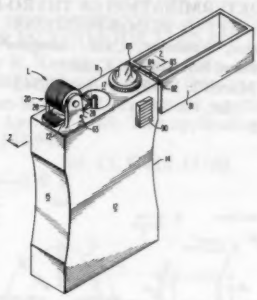
A fuel burning apparatus comprising an air register, a liquid fuel burner and a gas fuel burner of unitary construction, the latter including a nozzle portion for conveying the gas fuel, a plenum portion disposed downstream gas flow-wise of the nozzle portion and in fuel receiving relationship therewith, an annular plate member interposed between the nozzle and plenum portions and connected thereto, and a plurality of individual spuds flow communicating with the plenum portion for discharging the gas fuel therefrom.

3,711,240

GAS-FUELED LIGHTER

Irvin J. Warshaw, 9 East 66th Street, Savannah, Ga.

Filed Aug. 11, 1971, Ser. No. 170,870
Int. Cl. F23q 1/02
U.S. Cl. 431—253 7 Claims



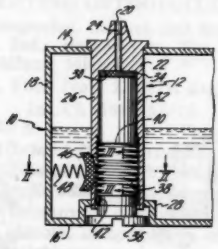
A lighter of the liquified gas fuel type having a case containing a fuel reservoir and a wick for conducting fuel to a normally closed valve operatively associated with an extensible conduit having an orifice at its outer end together with spark generating means and a valve actuator, the actuator being arranged to move the valve to an open position to permit gaseous fuel to enter the extensible conduit which in the retracted position permits the gaseous fuel to be ignited by the spark generating means and which may be extended telescopically to locate the burner orifice at the other end of the conduit in a location remotely spaced from the case for positioning the flame adjacent an area of limited access.

3,711,241

BUTANE GAS LIGHTER

Hiroichi Obata, 5588 Kawaiashiro-machi, Ryugasaki, Japan

Filed July 14, 1970, Ser. No. 54,731
Int. Cl. F23d 13/04
U.S. Cl. 431—344 1 Claim



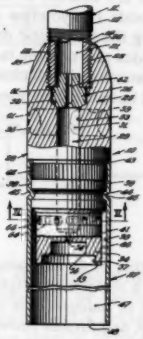
A liquefied gas lighter has a tank for containing liquefied butane or like fuel, and a burner unit that extends from an external orifice through the top of the tank to or near the bottom of the liquid in the tank. The burner is smoothly adjustable. A porous member with fine pin holes covers the opening from the tank to deliver low-pressure gas from the high-pressure liquid, stabilizing the flame. A small-bore passage extends from the external burner orifice to an internal transverse abutment at the top of a large-bore tubular part of the burner unit. A compressible gas-permeable disc is squeezed between the transverse abutment and the top of a rod. In one form, there is an adjustment screw that presses against the bottom of the rod. In another form, the transverse abutment and the burner orifice form a top part that is screw-threaded into a tubular part of the burner unit and the bottom of the rod bears against a stop.

3,711,242

GAS BURNER HEAD ASSEMBLY FOR TORCHES

Cadet E. Bowman, Sycamore, Ill., assignor to Olin Corporation, Stamford, Conn.

Filed May 29, 1969, Ser. No. 828,957
Int. Cl. F23d 13/36
U.S. Cl. 431—349 2 Claims



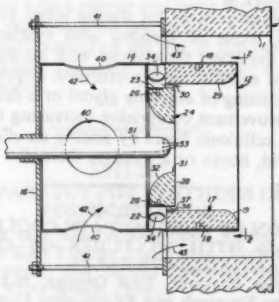
A gas burner head assembly generally comprises an elongated body member having an axially disposed main gas flow passage, a tubularly shaped flame holder at an outlet end, transverse air admitting passageways intersecting the main gas flow passage, and a circumferential array of passages formed in the body and arranged to deliver air-gas mixture in a swirling path forming an air-gas vortex within the flame holder.

3,711,243

REGENERATIVE TILE FOR FUEL BURNER

John Smith Zink; Hershel Goodnight, and Robert D. Reed, all of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed Feb. 2, 1971, Ser. No. 111,921
Int. Cl. F23c 5/08
U.S. Cl. 431—351 5 Claims



A ceramic structure substantially encasing atomized liquid fuel with the ceramic structure retaining heat in the presence of ignited fuel and serving to control the movement of air as it moves into the combustion of the liquid fuel to prevent the development of coke within the ceramic structure.

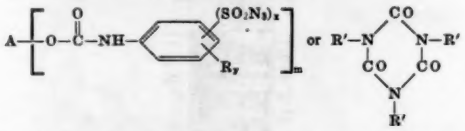
3,711,244

SULFONAZIDE BONDING OF POLYMERIC DYES ON POLYAMIDE, POLYESTER OR POLYOLEFIN UNDER RADIATION

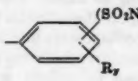
Adnan A. Sayigh; Fred A. Stuber, both of North Haven, and Henri Ulrich, North Branford, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 15,838, March 2, 1970, abandoned. This application Nov. 27, 1970, Ser. No. 93,503
Int. Cl. D06p
U.S. Cl. 8—2 11 Claims

Polymeric dyestuffs are bonded to substrates containing a plurality of C—H bonds (polyolefins such as polyethylene preferred) by applying the polymeric dyestuffs in association with certain sulfonazides as a coating to the substrate and exposing the coated substrate to irradiation (thermal or actinic). The sulfonazides used have the formulas:



wherein A is the residue of an aliphatic alcohol containing *m* hydroxyl groups and a molecular weight less than 300, *m* is 1 to 6, R is lower-alkyl or halogen, *x* is 1 to 2, *y* is 0 to 2, provided that $x+y$ is 3, and further provided that *m* is at least 2 when *x* is 1, the SO_2N_3 groups are in positions 3, 4, or 5 of the benzene nuclei and one of said positions is unsubstituted and R′ =



The irradiation can be carried out imagewise so as to reproduce images, e.g. illustrations, printed wording etc. on the substrate, said image being developed by washing out the unexposed unbonded polymeric dyestuff.

3,711,245

LIQUID FOR PAD-BATH DYEING CONTAINING GLYCOL COMPOUND AND BORIC ACID OR BORAX

John F. Neumer, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Sept. 18, 1970, Ser. No. 73,664
Int. Cl. C09b *67/00*; D06p *3/82, 5/04*
U.S. Cl. 8—21 R 3 Claims

An improved process for dyeing water swellable cellulosic fibers, alone or blended with synthetic fibers, by contacting the fibers throughout with an aqueous solvent or a solvent solution of a preformed dispersed dye, said solvent consisting of ethylene glycol or a derivative thereof, the improvement comprising increasing the fixation of dye on the cellulosic fibers by adding an effective amount of boric acid, borax or a mixture thereof.

3,711,246

INHIBITION OF CORROSION IN COOLING WATER SYSTEMS WITH MIXTURES OF GLUCONATE SALTS AND SILICATE SALTS

Zisis Andrew Foroulis, East Orange, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed Jan. 6, 1971, Ser. No. 104,477
Int. Cl. C23f *11/12, 11/18*
U.S. Cl. 21—2.7 7 Claims

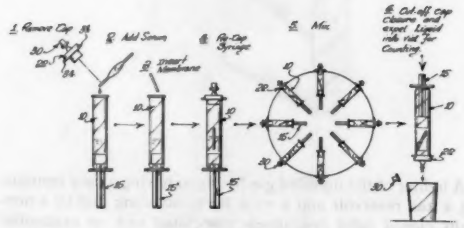
Oxidative corrosion in cooling water systems is substantially reduced by the addition of small amounts of a silicate and a gluconate. A polyphosphate can also be added if desired.

3,711,247

METHOD FOR DETERMINATION OF THYRO-BINDING CAPACITY OF BLOOD PROTEINS

Raymond J. Adams, Anaheim, Calif., assignor to Curtis Nuclear Corporation, Los Angeles, Calif.

Filed March 2, 1970, Ser. No. 15,342
Int. Cl. G01n *33/16*
U.S. Cl. 23—230 B 3 Claims



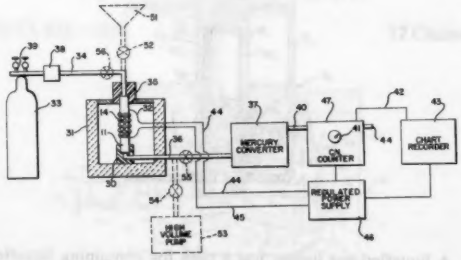
The ability of serum to bind additional triiodothyronine is determined by a method requiring minimal quantities of serum, of the order of 0.10 ml., and short mixing times, of the order of 40 minutes, by employment of a specially designed syringe-type reaction vial in which radioactive triiodothyronine and a buffer are prepackaged, and a resin membrane separable from the liquid reactants by syringing of the latter from the vial after mixing.

3,711,248

METHOD AND APPARATUS FOR MERCURY CONCENTRATION MEASUREMENT

Peter E. Coffey, Schenectady, N.Y., assignor to Environment/One Corporation, Schenectady, N.Y.

Filed July 28, 1971, Ser. No. 166,945
Int. Cl. G01n *21/26*
U.S. Cl. 23—230 R 14 Claims



Accurate determination of the concentration, calculated as elemental mercury, of a sample gaseous, liquid or solid medium containing mercury, either in elemental or reducible form, is obtained by

(1) the reduction of mercury containing compounds where necessary to elemental mercury in vapor form;
(2) conversion of the mercury content to condensation nuclei; and

(3) the measurement of the resultant condensation nuclei to yield an accurate indication of the concentration, calculated as elemental mercury, of mercury in the sample medium.

3,711,249

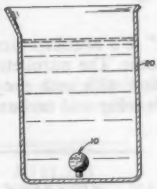
METHOD FOR DETECTING CORROSION INHIBITOR IN AQUEOUS ACID SOLUTIONS

Billy R. Keeney, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Continuation-in-part of abandoned application Ser. No. 819,795, Apr. 28, 1969. This application Apr. 14, 1971, Ser. No. 134,048

Int. Cl. G01n *33/00*

U.S. Cl. 23—230 R 18 Claims



Method for simply and inexpensively determining the presence of a corrosion inhibitor in an aqueous acid solution. Gas evolving from a material which will react with uninhibited aqueous acid solutions to evolve such a gas causes a small first container to rise to the surface of a liquid in a larger second container, thus indicating the absence of acid corrosion inhibitor. If the first container does not float, acid corrosion inhibitor is present.

3,711,250

GLUCOSE DETERMINATION METHOD EMPLOYING ORTHOTOLUIDINE

William S. Stavropoulos, Carmel, and Bernard J. Thiegs, Indianapolis, Ind., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,682

Int. Cl. G01n *33/16*

U.S. Cl. 23—230 B 8 Claims

An improved ortho-toluidine reagent composition for use in determination of glucose in biological fluids comprises sufficient oxalic acid or polyphosphoric acid to provide a uniform intensity of color when the composition is reacted with glucose, independently of contamination with trace amounts of iron.

3,711,251

DETECTION OF ORGANIC VAPOR CONTAMINANTS IN AIR

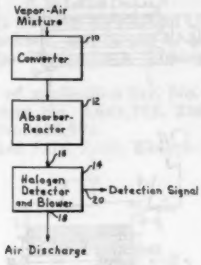
Louis H. Goodson, Kansas City, and William B. Jacobs, Independence, Mo., assignors to The Insurance Institute for Highway Safety, Washington, D.C.

Filed Apr. 14, 1971, Ser. No. 133,817

Int. Cl. G01n *31/06, 33/00*

U.S. Cl. 23—232 R 18 Claims

The presence of an organic vapor contaminant in air is determined by combining the air suspected of containing such vapor with a reactive halogen compound to convert the organic contaminant to the corresponding, volatile, covalent halide; then removing vaporous, ionically bound reaction by-products from the air; and then detecting the remaining covalent halide through the use of a halogen leak detector or other suitable halogen sensors. The process may proceed on a continuous or intermittent



basis, and has general application with respect to the detection of alcohol, aldehyde or ketone vapor contaminants. Apparatus is particularly adapted to sample air which is or recently has been in close proximity to a subject person to determine if a sufficient concentration of ethyl alcohol vapor is present to indicate that the subject may be impaired by alcohol.

3,711,252

COMPOSITION AND METHOD FOR THE DETECTION OF URIC ACID

Ashim Chandra Roy, 62 Gloucester Drive, London, England

No Drawing. Filed Oct. 13, 1971, Ser. No. 188,942

Claims priority, application Great Britain, Oct. 28, 1970, 51,276/70

Int. Cl. C07d *57/34;* C09k *3/00;* G01n *33/16*

U.S. Cl. 23—253 TP 9 Claims

Method for detecting uric acid in aqueous fluids which comprises contacting the fluid with a composition comprising a ferric salt and either 2,4,6-tri(2-pyridyl)-1,3,5-triazine or 2,2':6',2''-terpyride, in a buffered acidic medium. A preferable embodiment comprises incorporating the composition with a carrier and using the resulting combination as a dip and read test device. A further preferable embodiment comprises the use of a persulfate in the composition which increases the specificity and stability of the composition.

3,711,253

APPARATUS FOR SYNTHESIS OF FORMALDEHYDE

Horst Rothert and Rolf Schumacher, Berlin, Germany, assignors to Karl Fischer Apparate-u. Rohrleitungsbau, Berlin, Germany, and Societe Chimique des Charbonnages SCC, Courbevoie, France

Filed Jan. 18, 1971, Ser. No. 107,130

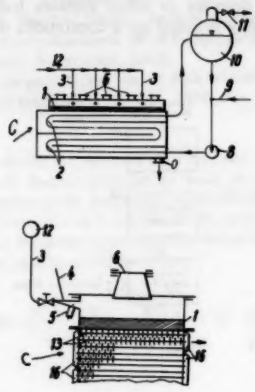
Claims priority, application Germany, Jan. 16, 1970, P 20 02 789.8

Int. Cl. B01j *9/04*

U.S. Cl. 23—288 K 13 Claims

A mixture of methanol and air is fed from one side into a bed of catalyzer, such as silver, which on reaction

with it results in the derivation of formaldehyde-containing gas at the opposite side of the bed. Cooling means is provided directly adjacent this opposite side so that the gas passes into immediate heat-exchanging contact with the cooling means and is cooled thereby.



3,711,254

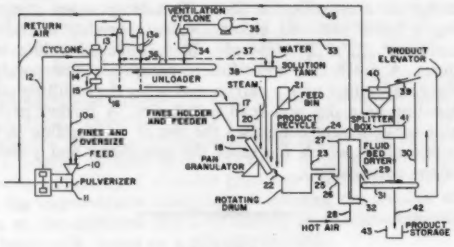
POTASH GRANULATION

John McGowan and Charles Raymond Kirby, Rossland, and Henry Daniel Alexander Cormode, Trail, British Columbia, Canada, assignors to Cominco Ltd., Montreal, Quebec, Canada

Filed Feb. 25, 1970, Ser. No. 14,098

Int. Cl. C01d *3/22*; B01j *2/14*

U.S. Cl. 23—313 12 Claims



Particulate potash is granulated in a pan granulator. The moist granules from the pan are mixed with warm recycled dry granules and tumbled in a rotating drum whereby the granules become equilibrated in both moisture content and temperature. The equilibrated granules are dried in a fluid bed dryer and sized by screening. The oversize and undersize granules are recycled, via a pulverizer, to the pan and the product size granules go to storage. The recycled dry granules are either taken from the dryer discharge or from the product size granules going to storage. The final product is a granulated potash of improved bulk density, hardness and granule shape, which is suitable for use in bulk blend fertilizers.

3,711,255

MOTOR FUEL COMPOSITION

Donald R. Lachowicz and George S. Saines, Fishkill, and George W. Eckert, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Dec. 24, 1970, Ser. No. 101,408

Int. Cl. C10l *1/18, 1/22*

U.S. Cl. 44—66 10 Claims

Motor fuel composition comprising a mixture of hydrocarbons in the gasoline boiling range containing a nitroketonized amide corresponding to the formula:

$$R-\underset{R'}{N}-CH_2-CH_2-CH_2-\underset{R''}{N}-H$$

where R, R′ or R″ is a nitroketonized group having from 4 to 40 carbon atoms. The nitroketonized amide provides the fuel composition with such properties as rust protection, carburetor de-icing and carburetor detergency.

3,711,256

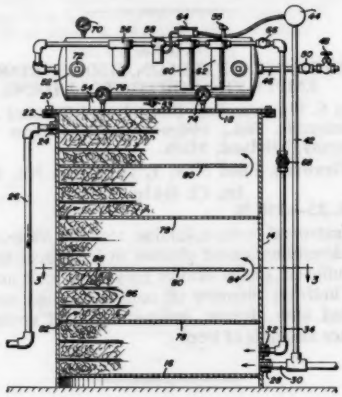
GAS CONDITIONING APPARATUS WITH BAFFLES AND DRYER UNIT

Will B. Williams, Oakland, Calif., assignor of a fractional part interest to Harry J. Benson, San Leandro, Calif.

Filed Dec. 15, 1970, Ser. No. 98,402

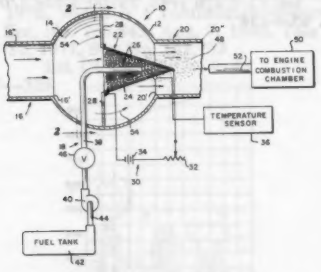
Int. Cl. B01f *3/02*

U.S. Cl. 48—180 R 6 Claims



A mixing tank or chamber having an inlet communicated with a source of dried air at a predetermined pressure and an inlet communicated with a source of natural or manufactured gas at a predetermined temperature with the tank or chamber having a plurality of spaced baffles therein and screen material to thoroughly mix and intermingle the gas and air to provide a homogeneous combustible mixture for discharge to a gas burning device such as a furnace, boiler or the like.

3,711,257
MEANS FOR AIDING FUEL ATOMIZATION
Wallace L. Linn, Indianapolis, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Continuation-in-part of Ser. No. 85,652, Oct. 30, 1970, abandoned. This application Dec. 21, 1970, Ser. No. 100,288
Int. Cl. F02m *15/04, 31/12*
U.S. Cl. 48—180 R 16 Claims

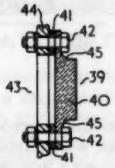


A microporous sheet of material is disposed between the fuel and air inlets and the outlet of a carburetor.

3,711,258
METHOD OF TRANSPORTING NATURAL GAS
Charles W. Matthews, Hinsdale, Ill., assignor to Institute of Gas Technology, Chicago, Ill.
No Drawing. Filed July 21, 1971, Ser. No. 164,924
Int. Cl. C07c *9/00*
U.S. Cl. 48—190 R 13 Claims

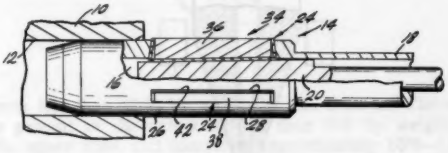
A method of transporting natural gas including the steps of transporting bulk volumes of natural gas in the form of a lower alkyl amine to a point remote from a point of origination, decomposing the lower alkyl amine at the point of destination to methane, ammonia and nitrogen, and then separating the methane for utilization. The lower alkyl amine can be thermally decomposed, or it can be decomposed by catalytic hydrogenation. The nitrogen content of the amine can be recycled on the return trip of the transporting vessel as aqueous ammonia for re-use, or it can be used as a hydrogen source in the reconversion of the amine to natural gas.

3,711,259
SAFETY DEVICE
William A. Gurney, Birmingham, England, assignor to Dunlop Holdings Limited, London, England
Filed Mar. 10, 1970, Ser. No. 18,231
Claims priority, application Great Britain, Mar. 19, 1969, 14,406/69
Int. Cl. F17d *3/00*; F23d *13/46*
U.S. Cl. 48—192 13 Claims



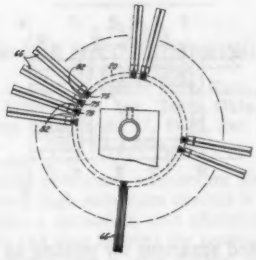
A flame arrester which comprises closure means for allowing gas to pass therethrough while preventing passage of a flame and retaining means for retaining the closure means in position in or adjacent an aperture or passage and in which the closure means comprises a porous metal and/or ceramic material in the form of a three-dimensional network arranged to define a plurality of cellular spaces which intercommunicate with one another and the retaining means comprises a compressed portion of the three-dimensional network of the closure means. Preferably the closure member is a reticulated polyurethane foam which has been electroplated with nickel or iron.

3,711,260
HONING STONE APPARATUS
Carl H. Kramm, Pinckney, and Roger E. Lee, Brighton, Mich., assignors to Wedge-Lock Honing Stone Co., Brighton, Mich.
Continuation-in-part of application Ser. No. 54,403, July 13, 1970, now Patent No. 3,641,715. This application July 1, 1971, Ser. No. 158,908
Int. Cl. B24d *5/10, 7/00*; B24b *9/02*
U.S. Cl. 51—204 8 Claims



Honing apparatus including a head supporting a plurality of radially adjustable abrasive honing stones wherein the openings defined in the heads receiving the stones are of such configuration as to cooperate with retainers attached to the stones to maintain the stones in firm assembly with the head, as the stones are consumed. Oblique end faces defined at the ends of the head openings deform stone retainer leg portions adjacent, but spaced from, hone stone end surfaces, and as radial movement of the stone occurs the degree of deformation increases to maintain positive holding of the stone as its radial dimension decreases during use.

3,711,261
ROTARY ABRASIVE DEVICE
Russell W. Burns, Topanga, Calif., assignor to Merit Abrasive Products, Inc., Compton, Calif.
Division of Ser. No. 817,773, April 21, 1969, Pat. No. 3,619,948. This application April 9, 1971, Ser. No. 132,889
Int. Cl. B24b *9/02*
U.S. Cl. 51—334 5 Claims



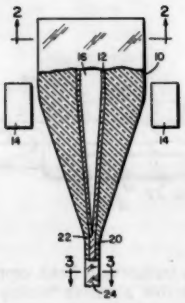
A rotary abrasive device in which abrasive units are replaceably mounted on a powered mandrel, the units including retainer members insertable endwise into grooves in the mandrel; the configuration and relationship of the retainer

members and peripheral openings of the grooves, and attachment of the retainers to abrasive packs with a spacing between the base edges of the packs and the surface of the mandrel, affording a limited pivotal movement of the retainer members and packs.

3,711,262
METHOD OF PRODUCING OPTICAL WAVEGUIDE FIBERS

Donald B. Keck, Corning, and Peter C. Schultz, Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 11, 1970, Ser. No. 36,267
Int. Cl. C03c *25/02*; C03b *21/00*
U.S. Cl. 65—3 28 Claims

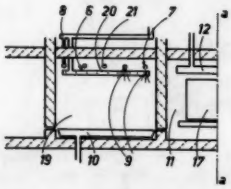


A method of producing an optical waveguide by first forming a film of glass with a preselected index of refraction on the inside wall of a glass tube having a different preselected index of refraction. This glass tube and glass film combination is then drawn to reduce the cross-sectional area and to collapse the film of glass to form a fiber having a solid cross-sectional area; the core being formed from the glass film, and the cladding being formed from the glass tube.

3,711,263
SURFACE TREATMENT OF GLASS AND SIMILAR MATERIALS

Lucien Leger, Montignies-le-Tilleul, Belgium, assignor to Glaverbel S.A., Watermael-Boitsfort, Belgium

Filed June 27, 1969, Ser. No. 837,026
Claims priority, application Luxembourg, Sept. 12, 1968, 56,863
Int. Cl. C03c *21/00*
U.S. Cl. 65—31 23 Claims

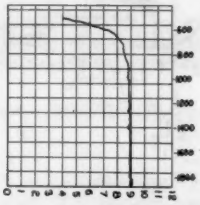


A method and apparatus for treating an article which has been previously chemically tempered to place exterior layers under compressive stress, and the treated article itself, the treatment involving removing an 0.1 to 20 microns thick surface layer of compressively stressed material from the article.

3,711,264
METHOD FOR PRODUCING A FARADAY ROTATION GLASS HAVING A HIGH VERDET CONSTANT

Charles C. Robinson, Sturbridge, Mass., Robert E. Graf, Southbridge, and Robert W. Young, Woodstock, Conn., and Merrill F. Sproul, Sturbridge, Mass., assignors to American Optical Corporation, Southbridge, Mass.

Original application Mar. 26, 1969, Ser. No. 810,539. Divided and this application Mar. 8, 1971, Ser. No. 121,813
Int. Cl. C03b *5/16, 29/00*; C03c *3/00*
U.S. Cl. 65—134 7 Claims

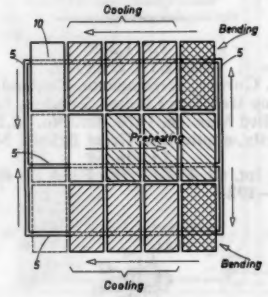


Glass containing a substantial amount of cerium in the form of cerous (Ce^{+3}) ions is prepared by fusing ceric oxide and dibasic ammonium phosphate, which reduces the ceric ions to cerous ions, and in certain instances antimony oxide is added to improve the ratio of cerous to ceric ions. Remelting cerium glass in argon atmosphere reduces any ceric ions to cerous ions, providing a clear glass.

3,711,265
APPARATUS FOR BENDING SHEET MATERIAL

Andre Jadin, Dampremy, Belgium, assignor to Glaverbel S.A., Watermael-Boitsfort, Belgium

Filed May 26, 1971, Ser. No. 147,041
Claims priority, application Great Britain, July 29, 1970, 36,766/70
Int. Cl. C03b *23/02*
U.S. Cl. 65—287 11 Claims



In apparatus for imparting a predetermined permanent curvature to sheet blanks, which apparatus provides a preheating zone arranged along a first line and a cooling zone arranged along a second line parallel to the first line, the improvement of providing an additional cooling zone arranged along a third line parallel to the first line and the second line. Two bending stations are provided, one arranged near the second line and the other arranged near the third line. Both bending stations are adjacent the end

of the first line in the direction of motion of trays being conveyed along alternative conveying paths defined by tracks.

3,711,266

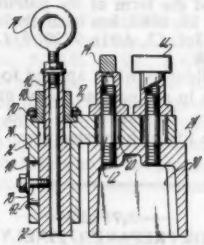
PLUNGER SUPPORT MEANS FOR MOLTEN GLASS FEEDER

Robert A. Daly, West Hartford, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Continuation of abandoned application Ser. No. 5,868, Jan. 26, 1970, which is a continuation-in-part of application Ser. No. 750,843, Aug. 7, 1968. This application May 12, 1971, Ser. No. 142,753

Int. Cl. C03b *5/26, 9/40*

U.S. Cl. 65—328 **1 Claim**



A molten glass feeder has a conventional feeder bowl with an outlet spout in which a triple gob orifice plate is provided so that three plungers, mounted in depending, side-by-side relationship, can be reciprocated vertically for forming gobs of glass in the orifice plate. Each plunger is mounted in a chuck, which is in turn adjustably mounted vertically in a support bracket having an opening and a threaded nut for receiving the plunger chuck. Each support bracket has two oversized openings for loosely receiving two threaded studs which studs are threadably secured in a head carried on a conventional reciprocating plunger carrier. The plungers can be located in their nominal positions by using locating pins and then anchored in final positions by suitable stud means. In one version of the support bracket the plunger chucks are mounted in a circular plate, which plate can be angularly located in the head portion of the carrier to permit all of the plungers to be rotated collectively for set-up purposes.

3,711,267

COMPOSITE REFRACTORY FOR USE IN MOLTEN GLASS FEEDER

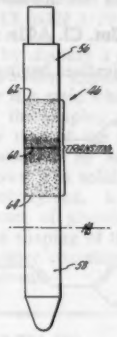
A. D. Fentzke, Granby, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Continuation of abandoned application Ser. No. 796,060, Feb. 3, 1969. This application July 26, 1971, Ser. No. 166,226

Int. Cl. C03b *11/06*

U.S. Cl. 65—330 **1 Claim**

A feeder bowl is mounted at the end of a molten glass forehearth, and has a reciprocating plunger and rotating tube for feeding gobs of the molten glass through an orifice in the outlet spout of the feeder bowl. To combat the tendency for the plunger to act as an electrode in a galvanic cell created in the molten glass the plunger is made up from two refractory materials, one for use in the glass, the other for use above the glass surface to electrically insulate the submerged portion from the metallic plunger operating mechanism. A method is disclosed for forming the composite refractory plunger in three zones, the upper and lower zones being distinct materials, and the third zone being formed integrally with the other two as a transition zone comprising a mix of the two refractory slip compositions introduced through a series of bifurcated metering valves in the hoses or pipes normally used in the slip casting process. The upper zone comprises approximately 90% by weight of alumina, and the lower



zone less than 80% by weight of this material. Zirconia is present to the extent of less than 2% by weight in the upper zone, and comprises approximately 10%–15% by weight of the composition of the lower zone. The transition zone comprises a substantial percentage of alumina and some silica is present in all three zones.

3,711,268

STABILIZATION OF POLYPHOSPHATE FERTILIZER SOLUTIONS

Alva W. Frazier, Florence, Ala., assignor to Tennessee Valley Authority

Continuation of Ser. No. 82,809, Oct. 21, 1970, and a continuation-in-part of Ser. No. 30,264, April 20, 1970, abandoned. This application May 7, 1971, Ser. No. 141,366

Int. Cl. C05b *7/00*

U.S. Cl. 71—34 **1 Claim**

A minor excess of fluoride over that required to react with all the aluminum and magnesium in ammonium and potassium polyphosphate liquid fertilizer solutions will prevent the precipitation of these elements. Effectively, this addition of excess fluoride shifts the solution composition from a region where the water-insoluble precipitate $MgAl(NH_4)_5(P_2O_7)_2F_2 \cdot 6H\bar{O}$ (I) is stable to a region where the water-soluble form, dimorph II, is stable; thus the metallic cations are sequestered. Alternatively a smaller amount of fluoride is added and the resulting precipitate is filtered to obtain a stabilized solution.

3,711,269

PROCESS FOR MANUFACTURING LIQUID FERTILIZER

William T. Curless, Overland Park, Kans., assignor to Willchemco, Inc., Tulsa, Okla.

No Drawing. Filed Sept. 17, 1970, Ser. No. 73,215

Int. Cl. C05b *7/00*

U.S. Cl. 71—36 **5 Claims**

A clear liquid potassium ammonium phosphate fertilizer of relatively high potassium content is manufactured by ammoniating a potassium acid phosphate solution to a specific ratio and then filtering the ammoniated solution at a temperature within a very narrow range so as to remove precipitated solids. By adhering to the preferred limitations of composition and temperature the production of unstable triammonium phosphate as a byproduct is avoided and liquid fertilizer with P_2O_5 to K_2O weight ratios of about 1 to 1.5 may be obtained.

3,711,270
2,2'-METHYLENEBIS(TRANS-3,5-DIHYDROXYSTILBENE) AND USE AS BIOCIDE

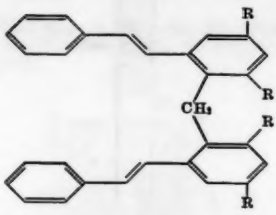
Herbert George Arlt, Jr., Ridgefield, and Natalie Elaine Conroy, New Canaan, Conn., assignors to Arizona Chemical Company, New York, N.Y.

No Drawing. Original application Oct. 28, 1968, Ser. No. 771,359, now Patent No. 3,531,533, dated Sept. 29, 1970. Divided and this application Mar. 31, 1970, Ser. No. 24,377

Int. Cl. A01n *9/24*

U.S. Cl. 71—67 9 Claims

New stilbene derivatives having the following formula:



wherein R is methoxy or hydroxy; and a method for destroying or inhibiting microorganisms using the new stilbene derivatives.

3,711,271
METHOD FOR CONTROLLING ALGAE

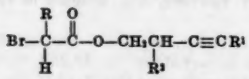
Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Aug. 28, 1969, Ser. No. 853,950

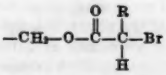
Int. Cl. A01n *9/00*

U.S. Cl. 71—67 1 Claim

Compounds having the formula



in which R is hydrogen or cyano, and R^1 is hydrogen, alkyl, aryl, nuclear substituted aryl or



R^2 is H or methyl, their method of preparation, and the use of these compounds as biocides, such as in controlling fungi, bacteria, and algae.

3,711,272
CYCLIC DIAMIDES OF 2-CHLOROETHYLPHOSPHONIC ACID AS PLANT GROWTH REGULANTS

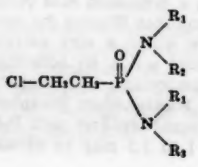
David I. Randall and Robert W. Wynn, Easton, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Dec. 23, 1969, Ser. No. 887,746

Int. Cl. A01n *9/36*

U.S. Cl. 71—86 9 Claims

Plant growth regulating compounds are substituted 2-chloroethylphosphonic diamides of the formula:



wherein R_1 is cycloalkyl, R_2 is hydrogen or cycloalkyl or R_1 and R_2 together form a heterocyclic ring such as morpholine, piperidine or pyrrolidine. They are prepared by the reaction of 2-chloroethylphosphonic dihalide with the appropriate amine or by the reaction of excess amine with a 2-chloroethyl dichlorophosphite followed by rearrangement of the chloroethyl ester intermediate.

3,711,273
METHOD FOR IMPROVING THE YIELD OF FRUITS

William D. Mitchell, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation of application Ser. No. 809,972, Mar. 24, 1969. This application Oct. 5, 1970, Ser. No. 90,187

The portion of the term of the patent subsequent to Jan. 19, 1988, has been disclaimed

Int. Cl. A01n *9/20, 9/12*

U.S. Cl. 71—120 2 Claims

Several 1-arylbiurets when applied to various plants at flowering results in an increase in the number and size of fruit set, thereby increasing the yield. The compounds also prolong the life of harvested green leafy vegetables.

3,711,274
PROCESS FOR PREPARING FINELY PARTICLED NICKEL POWDER

Franco Montino, Casale Monferrato, and Franco Guerrieri, Novara, both of Italy, assignors to Montecatine Edison S.P.A., Milan, Italy

Filed May 14, 1970, Ser. No. 37,294

Claims priority, application Italy, May 19, 1969, 16970 A/69

Int. Cl. C22b *23/00*; B22f *5/00*

U.S. Cl. 75—.5 A 2 Claims

A process is disclosed for preparing finely particled metallic nickel powder, with spheroidal form, having dimensions lower than 1 micron. Bis-acrylonitrile-nickel is suspended in methanol, and the suspension is heated at temperatures between 100° and 200°C, and preferably at 150°–180°C, up to the complete decomposition. During the heating of the suspension, hydrogen is introduced under pressure.

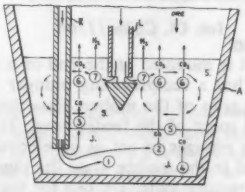
3,711,275
METHOD FOR THE PRODUCTION OF LIQUID PIG IRON OR STEEL DIRECTLY OF DRESSED ORE

M. K. Olof Johnsson, Skalviksvagen 5, Hagfors, Sweden

Filed Oct. 13, 1969, Ser. No. 865,717

Int. Cl. C21b *13/00*

U.S. Cl. 75—30 7 Claims



In a reduction process wherein liquid ferrous metal is covered by an iron oxide-containing slag layer and wherein iron-containing solids are supplied to the slag from above, the

smelting is favorably influenced by the direct supply of an oxygen-containing gas directly into the slag layer to such a depth therein that reducing gas formed in the layer and moving upwardly through the same is converted largely to carbon dioxide and/or water, the supply of reduction means into the iron bath being adjusted to counteract any insufficiency of carbon content in the bath.

3,711,276
NONMAGNETIC BARREL STEEL
Lars Ivar Hellner and Nils Erik Allan Hede, Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden
No Drawing. Filed Feb. 5, 1970, Ser. No. 9,066
Claims priority, application Sweden, Feb. 10, 1969, 1,798/69
Int. Cl. C22c *39/20*
U.S. Cl. 75—128 A 1 Claim

The use as material for gun barrels of a steel alloy containing 0.35–0.80% carbon, 4–15% manganese, 2–12% chromium, 2–15% nickel, 0.6–1.6% vanadium, up to 3.0% molybdenum, up to 5% tungsten, niobium 0–0.3% and boron 0.02%, the amounts of manganese and nickel being so chosen that a stable austentic structure is obtained, and the amounts of molybdenum and tungsten being so chosen that the sum of the percentage of tungsten and twice the percentage of molybdenum exceeds 2%.

3,711,277
METHOD OF ALLOYING TOGETHER WITH SEMIKILLING STEEL
Ludwig von Brogdandy, Helmut Richter, and Eckehard Forster, Oberhausen, Germany, assignors to Huttenwerk Oberhausen A.G., Oberhausen, Germany
No Drawing. Filed July 28, 1969, Ser. No. 845,501
Claims priority, application Germany, Aug. 1, 1968, P 17 58 750.7
Int. Cl. C21c *7/06;* C22c *35/00*
U.S. Cl. 75—129 2 Claims

Admixed with a ladle of liquid unkilled steel of the Siemens-Martin (open-hearth) type to yield a manganese content of 0.35 to 1.20% by weight is an alloy having the following composition:

50% to 85% by weight of manganese (preferably 60–75%),
2% to 15% by weight of silicon,
0.02% to 0.5% weight of titanium, and
the balance iron and the usual impurities.

This allow may also contain 0.5% to 5% aluminum. On casting in an ingot mold, a high-quality semikilled steel ingot is formed with an oxygen content of the order of 0.010 to 0.015%.

3,711,278
METHOD OF MANUFACTURING CHROMIUM ALLOYED STEEL
Erik Anders Ake Josefsson, Borlange, Sweden, assignor to Stora Kopparbergs Bergslags Aktiebolag, Falun, Sweden
No Drawing. Filed Feb. 17, 1970, Ser. No. 12,143
Claims priority, application Sweden, Apr. 23, 1969, 5,803/69
Int. Cl. C22c *33/00, 39/14*
U.S. Cl. 75—130.5 11 Claims

A chromium alloyed steel is manufactured in this way. Molten iron, containing carbon and alloying substances, is mixed with chromium oxide and a slag forming agent. The alloying substances are oxidized to form slag. The chromium oxide is reduced to metallic chromium. The slag is removed. The molten metal is now refined by means of oxygen, resulting in the carbon content dropping from 2 to 0.2% and the temperature increasing to 1700° C.

3,711,279
METHODS FOR MANUFACTURE OF SINTERING THIN POROUS METALLIC SHEETS
Andre R. Hivert, Pontoise, and Philippe M. Galmiche, Clamart, France, assignors to Office National d'Etudes et de Recherches Aerospationales (par abbreviation O.N.E.R.A), Chatillon-sous-Bagneux, France
No Drawing. Filed Feb. 4, 1970, Ser. No. 8,749
Claims priority, application France, Feb. 7, 1969, 6902847
Int. Cl. B22f *3/10*
U.S. Cl. 75—222 19 Claims

A blank is produced by shaping a material comprising at least one metallic powder agglomerated by a solid binder. The solid binder is a resin which is initially liquid and present throughout the shaping step and sublimable at a temperature below that of the sintering treatment. This resin is then eliminated by sublimation and the sintering treatment follows. The solid resin may be polymethylmethacrylate, polystyrene, a polymethylstyrene type resin or a copolymer of glycolphthalomaleate and methylmethacrylate. The shaping of the blank may be by means of a liquid monomer containing a polymerisation catalyst and a suitable solvent.

3,711,280
METALLOCENE PHOTOCONDUCTORS USED IN ELECTROPHOTOGRAPHY
Arthur L. Johnson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Feb. 17, 1971, Ser. No. 116,208
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.6 6 Claims

A class of metallocene compounds are disclosed which exhibit photoconductive properties useful in electrophotography.

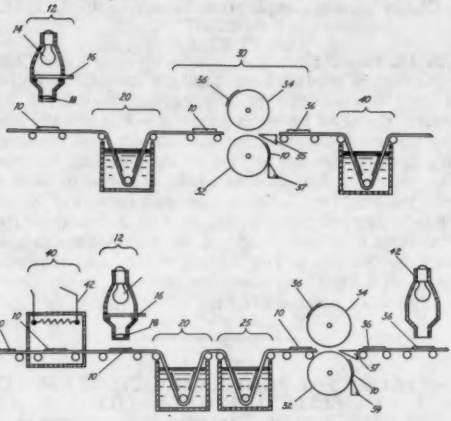
3,711,281
SILVER SALT DIFFUSION PROCESS
Walter Limberger, Hamburg-Poppenbuettel, Germany, assignor to Lumoprint Zindler KG, Hamburg, Germany
No Drawing. Original application Nov. 22, 1966, Ser. No. 596,221. Divided and this application Dec. 9, 1969, Ser. No. 883,637
Claims priority, application Germany, Nov. 25, 1965, P 15 72 111.6
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 R 4 Claims

Silver salt diffusion transfer method in which the receiving material prior to contact with the negative material is moistened with a liquid and squeezed. A second squeezing takes place while the receiving material and the negative are in contact with each other.

3,711,282
DATA STORAGE SYSTEMS
Elliot Berman, Braintree, and Carl F. W. Ekman, Bedford, Mass., assignors to Itek Corporation, Lexington, Mass.
Continuation-in-part of abandoned application Ser. No. 492,231, Oct. 1, 1965. This application May 18, 1970, Ser. No. 38,221
Int. Cl. G03c *5/54;* G03g *13/22*
U.S. Cl. 96—29 R 9 Claims

Processes and apparatus for producing an image and systems for practicing these processes comprising (1) exposing a copy medium comprising a photosensitive photoconductor to thereby activate the exposed portions thereof, (2) contacting this medium with image-forming materials which undergo an oxidation-reduction type reaction when contacted with the activated portions of the copy medium to thereby deposit on these portions an image which differs in solubility from the unreacted image-forming materials in the non-exposed portions of the copy medium, and (3) contacting this copy medium with an

image receiving medium in the presence of a solvent for the unreacted image-forming materials, whereby the image-forming materials in the unexposed portions of the



copy medium are transferred to the image-receiving medium to thereby establish a positive image-pattern in the image-receiving medium.

3,711,283

IMAGE-RECEIVING ELEMENTS AND PHOTOGRAPHIC PROCESSES EMPLOYING SAME

Richard W. Young, Wellesley Hills, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Original application Apr. 1, 1968, Ser. No. 717,683, now Patent No. 3,607,269, dated Sept. 21, 1971. Divided and this application Dec. 30, 1970, Ser. No. 102,773

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 R **14 Claims**

Image-receiving elements and processes for forming such elements are disclosed, wherein the element comprises a support carrying a layer composed of at least two strata, including a first stratum which comprises a hydrolyzed polymer, e.g., regenerated cellulose, containing a silver precipitating agent and a mercapto substituted compound, and a second stratum comprising an unhydrolyzed, alkali hydrolyzable polymer, e.g., a cellulose ester. Reagents initially located in a stratum of unhydrolyzed polymer are extracted from the unhydrolyzed polymer in a controlled manner during processing.

3,711,284

PHOTOGRAPHIC FILM WITH SUBBING LAYERS

August Jean van Paesschen, Antwerp, Lucien Janbaptist van Gossum, Kontich, and Jan Jozef Priem, Mortsel, Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

No Drawing. Original application Sept. 27, 1968, Ser. No. 763,382, now Patent No. 3,649,336. Divided and this application July 23, 1971, Ser. No. 165,607

Claims priority, application Great Britain, Sept. 28, 1967, 44,114/67

Int. Cl. G03c *1/80*

U.S. Cl. 96—87 R **13 Claims**

Improved adherence is obtained for sheet material having a hydrophobic film support or base, such as a hydrophobic cellulose ester or polyester, by the combination of a vinyl polymer subbing layer arranged directly on the hydrophobic support, the subbing layer being formed of a copolymer containing at least 45% by weight of vinylidene chloride and/or vinyl chloride monomer along with a minor amount of a hydrophilic vinyl monomer with the balance being constituted by any other vinyl monomer, and superimposed upon the vinyl subbing layer a layer containing a mixture of gelatin with a copolymer of butadiene and a vinyl monomer containing 30–70% by weight of butadiene, the ratio of the gelatin to the butadiene copolymer being in the range of 1:3 to 2:1 by weight. An additional layer can be applied over the gelatin/copolymer layer and constituted by such ingredients as are desirable for the particular utility of the resultant sheet material, such as light-sensitive silver halide emulsion photographic layers.

3,711,285

LIGHT-SENSITIVE COMPOUNDS

Albert S. Deutsch, Yonkers, and Joseph M. Poppo, New Rochelle, N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

No Drawing. Filed Aug. 5, 1971, Ser. No. 169,551

Int. Cl. G03c *1/54*; G03f *7/08*; G07c *113/00*

U.S. Cl. 96—75 **20 Claims**

Light-sensitive compounds and compositions comprising halogenated alkyl esters of naphthoquinone diazides that resist hydrolysis during prolonged storage, and sensitized lithographic printing plates made therewith.

3,711,286

LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC EMULSION

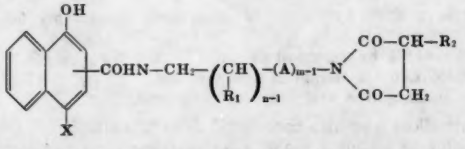
Kenro Sakamoto, Tokyo; Takaya Endo, Hino-shi, Tokyo; Masakuni Iwama, Yamato-cho, Tokyo; Isaburo Inoue, and Yutaka Takei, both of Hino-shi, Tokyo, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 796,927, March 5, 1969, abandoned. This application June 28, 1971, Ser. No. 157,609

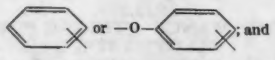
Int. Cl. G03c *1/40*

U.S. Cl. 96—100 **9 Claims**

Light-sensitive gelatino-silver halide color photographic emulsions containing a new cyan coupler compound of the formula



wherein R_1 is hydrogen or methyl; R_2 is an aliphatic hydrocarbon radical of eight to 20 carbon atoms; n is 1 to 4; m is 1 or 2; A is a divalent group



X is hydrogen, halogen or an arylazo group.

3,711,287

PHOTORESIST COMPOSITIONS

Kenneth R. Dunham, and Marshall E. Yost, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 19, 1971, Ser. No. 145,025

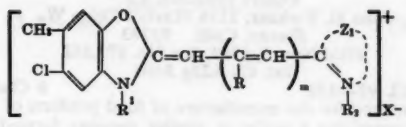
Int. Cl. G03c *1/68*

U.S. Cl. 96—115 R **9 Claims**

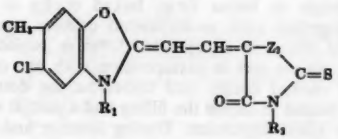
Novel rubbery photoresist compositions are described which include a hydroperoxide to improve adhesion of the resist to the substrate on which it is coated.

3,711,288
LIGHT-SENSITIVE, PHOTOGRAPHIC SILVER HALIDE EMULSION
Shui Sato and Kaiichiro Sakazume, Tokyo, Eiichi Sakamoto, Hanno-shi, and Noboru Fujimori, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Continuation-in-part of abandoned application Ser. No. 652,599, July 11, 1967. This application Dec. 1, 1970, Ser. No. 94,218
Claims priority, application Japan, July 28, 1966, 41/49,030
Int. Cl. G03c 1/16
U.S. Cl. 96—132 7 Claims

A light-sensitive, photographic silver halide emulsion which contains, as a sensitizer, a compound of the general formula



or



wherein R is hydrogen or lower alkyl radical: R_1 and R_2 individually mean lower alkyl, lower alkenyl, substituted alkyl selected from the group consisting of hydroxy alkyl, acetoxy alkyl, carboxy alkyl and sulfo alkyl or aryl radical; Z_1 is an atomic grouping which can form, together with the adjacent nitrogen and carbon atoms, a five- or six membered heterocyclic ring; Z_2 means oxygen, sulfur or a radical $=NR_3$ (in which R_3 is lower alkyl or carboxy-alkyl radical); X is an acid residue, provided that X may not exist if the substituted alkyl radical taken for R_1 or R_2 is capable of forming, together with an adjacent nitrogen atom, an intramolecular salt; and *m* is equal to 0 or 1.

3,711,289
PROTEIN-SULFONYL HALIDE COMPLEX RUMINANT FEED MATERIAL
Robert E. Miller, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Oct. 27, 1970, Ser. No. 84,475
Int. Cl. A23k 1/00
U.S. Cl. 99—2 R 4 Claims

Improved protein feed material for ruminants which is resistant to digestive breakdown in the rumen but not in the abomasum and/or intestines which comprises the reaction product of a protein-containing feed material and an alkyl or aryl sulfonyl halide. Exemplary of such sulfonyl halides is p-tolyl sulfonyl chloride.

3,711,290
PROTEIN-ACROLEIN ACETAL COMPLEX RUMINANT FEED MATERIAL
Robert E. Miller, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Oct. 27, 1970, Ser. No. 84,477
Int. Cl. A23k 1/00
U.S. Cl. 99—2 R 3 Claims

Improved protein feed material for ruminants which is resistant to digestive breakdown in the rumen but not in the abomasum and/or intestines which comprises the reaction product of a protein-containing feed material and an acrolein acetal. Exemplary of such acrolein acetals is acrolein dimethyl acetal.

3,711,291
JUICY SAUSAGE ANALOG
Harold T. Leidy, New City, N.Y., Charles M. Kerrigan, Wayne, N.J., and Robert T. Tewey, Dobbs Ferry, and Louis Bartenbach, Thornwood, N.Y., assignors to General Foods Corporation, White Plains, N.Y.
No Drawing. Filed Aug. 20, 1970, Ser. No. 65,716
Int. Cl. A23j 3/00
U.S. Cl. 99—17 4 Claims

A juicy sausage meat analog is formed from a heat set protein gel that has incorporated non-rendered animal fatty tissue.

3,711,292
PREPARATION OF AN ALCOHOLIC BEER USING A RAW CEREAL GRAIN HYDROLYSATE
Michael R. Sfat and Bruce J. Morton, Manitowoc, Wis., assignors to Bio-Technical Resources, Inc., Manitowoc, Wis.
No Drawing. Filed Apr. 23, 1970, Ser. No. 31,415
Int. Cl. C12c 5/00, 7/00; A23l 1/00
U.S. Cl. 99—31 7 Claims

A concentrated vegetable protein hydrolysate substantially free of starch is produced by treating a starchy proteinaceous cereal grain product in aqueous medium with added proteolytic enzyme in the absence of substantial added amylolytic enzyme to produce a solution containing soluble protein hydrolysis products together with a starchy carbohydrate fraction, separating the solution from undissolved residue, and treating the separated solution with added amylolytic enzyme to produce a substantially starch-free solution. The product is useful as a flavor precursor for a fermented alcoholic beverage, particularly beer, and as a food supplement or ingredient. The product may be incorporated in a fermentation wort for producing a fermented alcoholic beverage. A low carbohydrate beverage may be produced by incorporating a highly fermentable sugar in the wort to provide a wort low in unfermentable carbohydrates.

3,711,293
CLARIFYING AND STABILISING BEER
Kenneth H. Geiger and Hubert LeMaire, London, Ontario, Canada, assignors to Labatt Breweries of Canada Limited, London, Ontario, Canada
Filed Jan. 9, 1970, Ser. No. 1,856
Int. Cl. C12h 1/00
U.S. Cl. 99—48 5 Claims

Fermented beverages are clarified and stabilised by treating with kieselguhr encapsulated or coated with a polyamide resin.

3,711,294
NATURAL ORANGE BASE
Cedric D. Atkins and John A. Attaway, Winter Haven, and Matthew D. Maraulja, Lakeland, Fla., assignors to State of Florida, Department of Citrus
No Drawing. Filed Oct. 20, 1969, Ser. No. 867,886
Int. Cl. A23l 1/02
U.S. Cl. 99—79 11 Claims

Single strength orange juice is heated to deactivate the natural pectic enzymes. Specific pectic enzymes are added to the juice and hydrolysis of the pectins is continued until the level of water soluble pectins is between 0.01 to 0.15 weight percent. The specific enzymes are deactivated by heating and the insoluble solids are removed. The single strength base can be converted into a concentrate by removing water to produce a product having a Brix value

of about 64–80°. A carbonated beverage is produced by diluting the orange juice base concentrate with carbonated water. Isotonic salts can be added to the orange base.

3,711,295
SHAPED RICE PRODUCT AND METHOD FOR PRODUCING SAME
Harold W. Zukerman, 6035 N. Damen Ave., Chicago, Ill.
Filed Aug. 18, 1969, Ser. No. 850,864
Int. Cl. A23l *1/10*
U.S. Cl. 99—80 R **10 Claims**

A rice food product having a formed shape and preferably composed at least in part of individual rice grains or rice particles that are joined together, and further having a relatively crisp or hard outer surface as compared to its interior. The product has a new and distinctive mouthfeel and taste.

3,711,296
SNACK FOOD PRODUCTION
Robert W. La Warre, Sr., Lima, Ohio, assignor to Beatrice Foods Co., Chicago, Ill.
Filed Nov. 24, 1969, Ser. No. 879,088
Int. Cl. A23l *1/10*
U.S. Cl. 99—80 R **8 Claims**

A method and apparatus are disclosed for extruding a cereal composition into a shaped snack food. The particular cereal composition is liquified in the extruder and fully cooked in a short time. The extruded and chopped shape requires no further cooking and has a pleasing appearance and taste.

3,711,297
PROCESS FOR THE TREATMENT OF UNCHLORINATED CAKE FLOUR
Rudolf G. K. Strobel, Corerain Township, Hamilton County, and James P. Smith, North College Hill, both of Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio
Filed Dec. 29, 1970, Ser. No. 102,507
Int. Cl. A21d *6/00, 2/02*
U.S. Cl. 99—93 **8 Claims**

Raw, unchlorinated wheat flour is slurried with water at a flour to water ratio of 1:1 to 1:10 and a pH of 2.5 to 10.5. The slurry is incubated for 30 seconds to 35 minutes at 32°–98° F and then dried. When unchlorinated wheat flour which has been treated by the above process is used in baking cakes, the products exhibit good volume, texture, crumb color characteristics, and a moist melt-in-the-mouth quality.

3,711,298
PROCESS FOR PREPARING PACKAGED MEAT PRODUCTS FOR PROLONGED STORAGE
Virgil W. Vogel, deceased, by Virgil J. Vogel, co-executor, and Paul W. Vogel, Pekin, Ill., assignors to Bird Provision Co., Pekin, Ill.
Continuation of application Ser. No. 338,158, Jan. 16, 1964, which is a continuation-in-part of application Ser. No. 48,561, Aug. 10, 1960, now Patent No. 3,124,462. Divided and this application Jan. 21, 1971, Ser. No. 108,476
The portion of the term of the patent subsequent to Mar. 10, 1981, has been disclaimed
Int. Cl. A22c *18/00;* **B65b** *25/06*
U.S. Cl. 99—108 **11 Claims**

A process for preparing packaged meat in which the meat is removed from a freshly slaughtered carcass while at substantially bleeding temperature under ambient temperature conditions, comminuting the meat under these conditions, sealing the comminuted meat within a flexible packaging material before the meat temperature has declined to ambient temperature, and rapidly reducing the temperature of the packaged meat to a storage temperature.

3,711,299
EGG WHITE COMPOSITION AND PROCESS OF MAKING SAME
Homer F. Ziegler, Jr., St. Louis County, Mo., assignor to Anheuser-Busch, Inc., St. Louis, Mo.
No Drawing. Filed Nov. 19, 1965, Ser. No. 508,827
Int. Cl. A23j *3/02*
U.S. Cl. 99—113 **36 Claims**

A method and composition for reducing the whip time of egg whites comprising guar gum. A synergistic effect is achieved by a combination of guar gum and a chemical whip time reducing agent. A combination of guar gum, okra gum and a chemical whip time reducing agent is also effective to reduce whip time of egg whites.

3,711,300
METHOD FOR PRODUCING EXPANDED FOOD PRODUCTS
John H. Forkner, 2116 Mayfair Drive W., Fresno, Calif. 93703
Filed Nov. 3, 1969, Ser. No. 873,262
Int. Cl. A23g *3/00*
U.S. Cl. 99—138 **8 Claims**

A method for the manufacture of food products of the type comprising a wafer or similar member formed of cooked dough or batter (e.g., baked cooky or pastry dough), together with an expanded cellular confection filling. The filling in unexpanded form is positioned in containing means and in juxtaposition with one or more masses of cooked dough, and thereafter the dough and filling are heated to soften the filling and a partial vacuum applied to effect expansion. During heating and expansion, the filling becomes bonded to the adjacent surface or surfaces of the wafer or wafers, and the configuration of the expanded filling is determined at least in part by the configuration of the containing means.

3,711,301
PREPARATION OF PROTEINACEOUS GRANULAR SEASONING
Tatsuo Asogawa, Yoshihiko Matsumura, Eiji Satani, and Shyozo Wada, Osaka, and Yoshiro Funakoshi, Kyoto, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
No Drawing. Filed July 1, 1970, Ser. No. 51,654
Claims priority, application Japan, July 1, 1969, 44/51,951
Int. Cl. A23l *1/26*
U.S. Cl. 99—140 R **14 Claims**

Granular seasoning products are produced by a process which comprises extruding a hygroscopic powdery condiment composition, which consists essentially of the hydrolyzate and/or extract of plant or animal protein, in a molten state at a temperature not higher than about 130° C. through a forming die of an extruder, granulating the thus extruded shaped solids, and coating the granules with an edible and non-hygroscopic coating material.

3,711,302
HONEY-MALT FLAVOR MATERIAL AND PROCESS OF PREPARATION
William A. Mitchell, Lincoln Park, N.J., and Howard D. Stahl, Tarrytown, N.Y., assignors to General Foods Corporation, White Plains, N.Y.
Division of Ser. No. 791,496, Jan. 15, 1969, Pat. No. 3,622,349. This application June 7, 1971, Ser. No. 150,838
Int. Cl. A23l *1/26*
U.S. Cl. 99—141 A **13 Claims**

Low calorie food flavoring and texture enhancing material prepared by drum drying an aqueous solution of low jelly grade pectin and artificial sweeteners.

3,711,303

PRODUCTION OF SOY SAUCE

Anthony J. Luksas and Wilmore Williams, Chicago, Ill., assignors to Beatrice Foods Co., Chicago, Ill.

No Drawing. Filed May 11, 1970, Ser. No. 36,427
Int. Cl. A23l *1/22*
U.S. Cl. 99—145 28 Claims

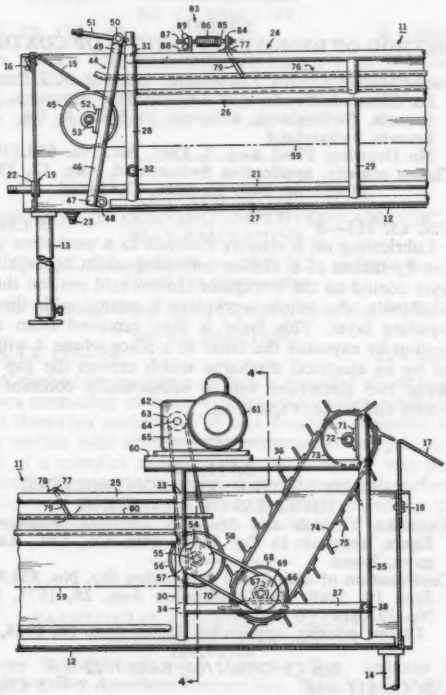
Soy sauce is produced in a relatively short time by fermenting Maromi with an inoculant selected from Saccharomyces and Debaryomyces or a Maromi isolate.

3,711,304

ROLL CENTERING METHOD AND APPARATUS

Robert L. Hawley, St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Original application July 12, 1968, Ser. No. 744,571. Divided and this application Apr. 9, 1970, Ser. No. 27,046
Int. Cl. A23l *3/02*
U.S. Cl. 99—360 5 Claims



A container having a solid yolk body and liquid albumen therein is subjected to rotation while being heated whereby the albumen is coagulated concentrically in the container about the yolk body to form an egg roll product. One of the machines disclosed for carrying out the above method has contact members which rotate the containers in a heated bath. The container may also be subjected to the above method in a continuous operation by providing a machine having a continuous conveyor in close proximity to a contact surface. The container is moved through a heated bath in the machine by the conveyor while the container is in rolling contact with the contact surface whereby the rolling or rotational motion is imparted to the container as it is heated.

3,711,305

COMPOSITIONS FOR SEALING LEAKS

Amos R. Anderson, Adrian, Mich., assignor to Joseph J. Packo

No Drawing. Original application Aug. 20, 1969, Ser. No. 851,734, now Patent No. 3,608,000, dated Sept. 21, 1971. Divided and this application Jan. 20, 1971, Ser. No. 108,205
Int. Cl. C09k *3/10, 3/12*
U.S. Cl. 106—33 9 Claims

The invention relates to composition for sealing leaks in pipes, conduits, gas lines, closed containers, tanks and the like. The interior of such equipment is first purged with a non-reactive dry gas, such as nitrogen, to remove any moisture and/or oxygen which may be present. Then the sealant composition is introduced into the interior of the equipment in a suitable inert gas vehicle under pressure. The sealant composition in the gas vehicle will escape from any leaks present in the equipment into the outer ambient atmosphere or adjacent soil in the case of pipe lines buried in soil. The sealant reacts with oxygen and/or moisture to form at the situs of the leak a solid reaction product. The sealant composition comprises (1) a volatile metal alkyl compound, and (2) a volatile organosilane compound. The volatile metal alkyl compound has the formula $M(R)_2$, wherein M is zinc or cadmium, or the formula $X(R)_3$, wherein X is aluminum, gallium, indium, or thallium, and R is an alkyl having 1 to 3 carbon atoms. The organo-silane compound has the formula $R_{4-n}Si(OR')_n$, wherein R is an alkyl having 1 to 3 carbon atoms, R' is an alkyl having 1 to 3 carbon atoms, and n is an integer from 1 to 4. The proportions of the metal alkyl compound may range by volume from about 1% to about 99%, the remainder being the organo-silane compound.

3,711,306

METHOD OF PRODUCING CEMENT

Naum Pinkhusovich Kogan, ulitsa Korolenko 9, kv. 22; Otar Petrovich Mchedlov-Petrosyan, ulitsa Vorobieva 14, kv. 5; and Vladimir Ivanovich Satarin, viezd Trinklera 5, kv. 16, all of Kharkov, U.S.S.R.

No Drawing. Filed May 9, 1969, Ser. No. 823,528
Int. Cl. C04b *7/02*
U.S. Cl. 106—100 3 Claims

A method of producing cement comprising calcinating a raw mix at a temperature not higher than 1380° C. until the content of free lime in the clinker reaches 1.5–15% by weight, and subsequently grinding the obtained clinker with addition, depending on the content of free lime therein, to a degree of fineness determined by the formula

$$S \geqslant 400CaO_{free} + 2000 \text{ cm.}^2/\text{g.}$$

where

S=specific surface of cement, $cm.^2/g.$;
CaO_{free}=content of free lime in the clinker.

3,711,307

DRYING OILS

Johannes Donatus von Mikusch-Buchberg, Hamburg, Germany, assignor to Lever Brothers Company, New York, N.Y.

No Drawing. Continuation of application Ser. No. 753,766, Aug. 19, 1968. This application Jan. 13, 1971, Ser. No. 106,271
Claims priority, application Germany, Aug. 22, 1967, P 16 68 769.7
Int. Cl. C08h *9/00*
U.S. Cl. 106—243 6 Claims

This invention relates to the preparation of a quick-drying binding agent, wherein an expoxidised oil is reacted with a polyethylenically unsaturated acid at 180°–270° C. and the reaction product is subsequently heated at 260°–350° C., until it has reached a desired viscosity. Part of

the unsaturated fatty acid is distilled off during the latter heating stage. A preferred binding agent has a viscosity of 20–200 poises at 20° C., an acid value of 6.0–12.0, a saponification value of 180–200 and a refractive index of 1.4830–1.4930 at 20° C.

3,711,308
COLORED NACREOUS PIGMENTS

Dieter Brand and Reiner Esselborn, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

No Drawing. Filed Nov. 25, 1970, Ser. No. 92,944
Claims priority, application Germany, Nov. 29, 1969, P 19 59 998.5
Int. Cl. C09c *1/00*
U.S. Cl. 106—291 **22 Claims**

Colored nacreous pigments are provided based on mica flakes coated with two superimposed layers, the first layer being titanium and/or zirconium oxide mixed with another metallic oxide, the latter being preferably an oxide having an inherent color, e.g. iron oxide. The second layer consists solely of titanium and/or zirconium oxide and is about twice as thick as the first coating.

The pigments are produced by feeding into an aqueous suspension of mica flakes at a substantially constant temperature between about 50 and 100° C. and at a substantially constant pH between 0.5 and 5.0:

(a) an aqueous metallic salt solution consisting essentially of a member selected from the group consisting of a titanium salt, a zirconium salt and mixtures thereof, said member being in a concentration of 0.01–4.0 mol/liter, said another salt of a metal selected from the group consisting of iron, chromium, nickel, cobalt, antimony, aluminum, silicon, tin, bismuth, and mixtures thereof, said other salts being in a total concentration of 0.02–1 mol/liter, said solution having a content of free acid corresponding to a molarity of 0.002–3;

(b) after the feeding of solution (a), feeding an aqueous, 0.01 to 4 molar molar solution consisting essentially of only a member selected from the group consisting of a titanium salt, a zirconium salt, and mixtures thereof, said solution having a content of free acid corresponding to a molarity of 0.002–3;

(c) simultaneously with the feeding of both (a) and (b), passing into the suspension an aqueous, 0.025- to 10-molar basic solution of a base selected from the group consisting of an alkali metal hydroxide, ammonium hydroxide, or an equivalent amount of gaseous ammonia; with the provisions that:

(d) the amount of salt fed per minute is approximately $0.01–25 \cdot 10^{-5}$ mol per $m.^2$ of mica surface,

(e) the thickness of the metallic oxide layer precipitated by solution (a) amounts to about one-third of the total coating thickness of the precipitated oxide layers.

3,711,309
METHOD OF SEALING LEAKS IN VESSELS AND JOINTS

Joseph J. Packo, 3600 N. Federal Highway, Fort Lauderdale, Fla. 33308

No Drawing. Filed May 3, 1971, Ser. No. 139,836
Int. Cl. B23p *7/04;* C09k *3/10*
U.S. Cl. 117—2 R **16 Claims**

Leaks in pipes, pipelines and pipe systems, conduits, closed containers, tanks and other vessels are sealed by introducing into the interior of the vessel a gaseous, volatilized or liquid volatilizable alcohol or glycol ether, applying pressure on the interior of the vessel sufficient to permit escape of the alcohol or the glycol ether from a leak present in the vessel into the ambient environment, and then introducing into the vessel a gaseous or volatilizable sealant agent capable of reacting with the alcohol or glycol ether present to form a solid seal in the situs of the leak. Alternatively, the sealant agent can be introduced first into the interior of the vessel followed by introduction of the alcohol or glycol ether.

3,711,310
REPAIR PROCESS FOR ALUMINUM AND MAGNESIUM ARTICLES

Henry P. Leeper, Jr., Madison, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed July 26, 1971, Ser. No. 164,877
Int. Cl. B23p *7/00*
U.S. Cl. 117—2 **3 Claims**

Damaged articles formed of aluminum or magnesium, including the alloys thereof, are repaired by suitably preparing the damaged area as, for example, grinding away the fault; refilling the prepared area utilizing a plasma spray repair coating comprising aluminum or an aluminum-silicon alloy with a mixture of 10–40 weight percent molybdenum; and subsequently refinishing to dimension, if required.

3,711,311
METHOD OF REMOVING PORTIONS OF COATING BY GLOW DISCHARGE

Roger Marcel Esseiva, Les Brenets, Louis R. F. J. Perrin, La Chaux-de-Fonds, and Lucien Willy Romang, Les Brenets, Switzerland, assignors to Seitz & Co., Les Brenets, Switzerland

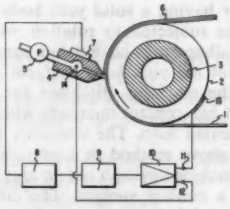
No Drawing. Filed Aug. 7, 1967, Ser. No. 658,619
Claims priority, application Switzerland, Aug. 12, 1966, 11,653/66; Dec. 15, 1966, 17,914/66
Int. Cl. B44c *1/20*
U.S. Cl. 117—8 **5 Claims**

Lubricating oil is reliably confined to a workpiece portion by means of a barrier consisting of an oil repelling layer coated on the workpiece around said portion thereof. Firstly, the whole workpiece is coated with the oil repelling layer. This layer is then removed from said portion by exposing the latter at a place where it will be hit by an electrical discharge which crosses the gap between two electrodes with a substantially constant intensity and without sparkling.

3,711,312
PRECISE METHOD FOR CONTROLLING THICKNESS OF A COATING

Kazutaka Yoshida and Mamoru Ishiwata, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of abandoned application Ser. No. 831,875, June 10, 1969. This application Aug. 20, 1971, Ser. No. 173,622
Claims priority, application Japan, June 10, 1968, 43/39,801
Int. Cl. G03c *1/00;* B44d *1/12*
U.S. Cl. 117—34 **5 Claims**



As a coating composition is deposited on a traveling web as the web passes over a back up roller disturbances such

as variations in the rate of web feed, the thickness of the web and/or vibrations are translated into an electrical signal which is then passed through a polarity converter, a phase shifter and an amplifier. The resulting signal is applied with a suitable bias voltage between the coating composition and a suitable electrode on the opposite side of the web at the point of application.

3,711,313

PROCESS FOR THE DEPOSITION OF RESINOUS FILMS ON ALUMINUM-BEARING SUBSTRATES

Toshihiro Nagano, Shizuoka, Matsuo Suzuki, Yaizu, Isao Hayashi and Takashi Kato, Osaka, Hiroshi Mochizuki, Shimizu, Yasuo Aoshima, Shizuoka, Kouji Shibata, Shimizu, and Toshiro Takahashi, Shizuoka, Japan, assignors to Riken Lightmetal Industry Company, Limited, Shizuoka-shi, Shizuoken-ken, and Kuboko Paint Company, Limited, Osaka-shi, Osaka-fu, Japan

No Drawing. Filed Apr. 10, 1970, Ser. No. 27,424

Claims priority, application Japan, Aug. 6, 1969, 44/70,286, 44/70,287; Oct. 28, 1969, 44/85,649, 44/85,650

Int. Cl. B44d *1/34*

U.S. Cl. 117—49 **6 Claims**

A process is described for forming on an anodized porous aluminum or aluminum alloy surface a resinous protective film which film is applied while the surface is wet and moist subsequent to water-wash.

3,711,314

METHOD OF COATING EMPLOYING ANIONIC WAX EMULSIONS

Craig C. Campbell, Cherry Hill, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Nov. 17, 1970, Ser. No. 90,483

Int. Cl. B44d *1/092*

U.S. Cl. 117—56 **11 Claims**

A method for coating a surface is provided which comprises contacting surfaces with an anionic wax emulsion; and thereafter contacting the wax emulsion deposited on the surface with a cationic coupling agent comprising a salt of a complex amine polymer whereby the wax particles in the emulsion are precipitated onto the surface. Articles of manufacture having surfaces coated by the above-defined method are also provided.

3,711,315

SACRIFICIAL CORROSION-RESISTANT DIFFUSION COATINGS

Harry Brill-Edwards, San Antonio, Tex., assignor to Chromalloy American Corporation, West Nyack, N.Y.

No Drawing. Original application May 31, 1968, Ser. No. 733,286, now Patent No. 3,627,503, dated Dec. 14, 1971. Divided and this application Oct. 8, 1970, Ser. No. 79,325

Int. Cl. C23c *9/00;* **B44d** *1/16*

U.S. Cl. 117—71 M **2 Claims**

A method is provided herewith for the production of sacrificial aluminum-containing diffusion coatings for the cathodic protection of ferrous metal articles against corrosion, particularly in highly saline atmospheres, in which coating an additional metal (such as manganese) is included to combine with the aluminum therein to form an intermetallic compound which is sufficiently anodic with respect to the substrate and/or intermetallic aluminum compounds therein to provide the desired sacrificial or cathodic protection.

3,711,316

PROCESS FOR COLORING KERATINOUS FIBRES WITH PIGMENT

Ian Bruce Angliss, Belmont, Victoria, and Menzie Lipson, Highton, Victoria, Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australian Capital Territory, Australia

No Drawing. Filed Feb. 16, 1971, Ser. No. 115,822

Int. Cl. D06m *3/02*

U.S. Cl. 117—55 **9 Claims**

Textile materials consisting wholly or partly of wool or other keratinous fibers are colored by coating the fibers with a dispersion of a finely divided solid pigment in an aqueous liquor containing up to 4% by weight of a mixture of a polyamide-epichlorhydrin resin and an etherified methylol melamine resin, drying the applied dispersion on the fibers, treating the thus coated fibers with an aqueous emulsion of a soft acrylic polymer containing from 0.5 to 7% of the polymer and drying and curing the applied coating.

3,711,317

PRINTABLE PAPER MATERIAL AND METHOD OF MAKING

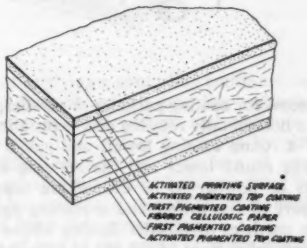
Paul Gottfried Bleier, Vienna, Austria, assignor to Samum Vereinigte Papier-Industrie K.G., Vienna, Austria

Filed Dec. 22, 1969, Ser. No. 886,956

Claims priority, application Austria, Feb. 25, 1969, A 1,897/69

Int. Cl. D21h *1/10;* **B32b** *29/06*

U.S. Cl. 117—76 P **9 Claims**



Printable material, such as paper, is imparted with improved printability by providing thereon catalytic substances, e.g. metal salts of higher organic acids or normally stable peroxides. In accordance with the invention, these substances are provided in finely dispersed form as distinguished from continuous films. In respect to coated papers, such as pigment coated papers, the catalytic substance is incorporated in the coating in dispersed form, advantageously in the form of an oily dispersion. In respect to uncoated papers, the substance may be incorporated in the paper mass proper, also in finely dispersed form.

3,711,318

METHOD OF CONTROLLING ULTRAFINES FROM REACTIVE FORM COKE

Jack Trechock, Woodbury Heights, N.J., Erik Saller, Stamford, Conn., and Robert T. Joseph, Richboro, Pa., assignors to FMC Corporation, New York, N.Y.

No Drawing. Filed Jan. 28, 1971, Ser. No. 110,608

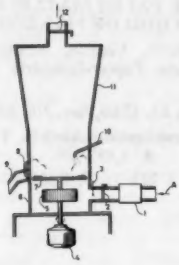
Int. Cl. C09j *3/22;* **C10l** *9/02*

U.S. Cl. 117—100 A **2 Claims**

Reactive form coke, made as described in Work et al., U.S. Pats. 3,140,241 and 3,140,242, issued July 7, 1964,

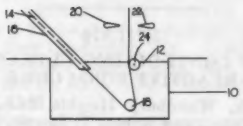
is treated with an aqueous dispersion of a film former to deposit on and adjacent the surface thereof from about 0.05 to about 3 weight percent of a solid which adheres to the surface and deposits in the surface pores, and acts both to reduce abrasion and to cause material abraded from the surface to be larger in size than the ultrafine (20-micron and smaller) particles which are produced in the absence of the coating, thereby controlling the airborne-dust problem which otherwise makes handling of the reactive form coke extremely difficult.

3,711,319
COATING OF PARTICLES OR POWDERS
Tsutomu Irikura and Jun Imai, Tokyo, Japan, assignors to Kyorin Seiyaku Kabushiki Kaisha
Filed June 16, 1970, Ser. No. 46,731
Claims priority, application Japan, June 18, 1969, 44/48,037
Int. Cl. B05c *25/00*; B44d *1/02*
U.S. Cl. 117—100 A **6 Claims**



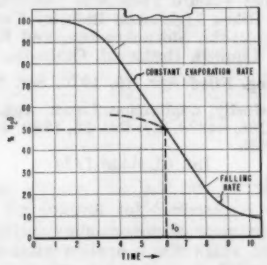
A process for coating particles or powder, characterized in that a horizontally rotating disk is installed in the lower part of a round coating tower, and gas is guided in between the round tower and the rotating disk, and also, particles or powder to be coated are supplied into the upper part of the tower, and a coating agent is sprayed into the particles or powder flowing above the disks due to the upward passage of the gas and the centrifugal force of the disk.

3,711,320
IMPROVED PROCESS OF COATING FERROUS METAL STRANDS
Fred Byrd, Lebanon, and Paul E. Schnedler, Middletown, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio
Filed Jan. 8, 1971, Ser. No. 104,938
Int. Cl. C23c *1/00*
U.S. Cl. 117—102 M **4 Claims**



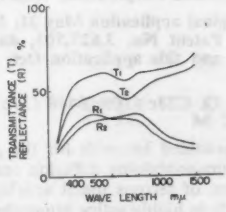
Metallic coating method and apparatus wherein a strand is withdrawn from a bath of molten coating metal past a roll only partly submerged in the bath and rotating so as to provide an oxide free bath surface through which the strand emerges from the molten metal. This roll may be positioned so as to effect a bending of the strand as it emerges from the bath.

3,711,321
RAPID DRYING POLYVINYL ALCOHOL COLOR COATING PROCESS
Peter G. Hibbert and Jerry C. Lofland, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Feb. 24, 1970, Ser. No. 13,714
Int. Cl. B44d *1/44*
U.S. Cl. 117—119.6 **6 Claims**



A process for producing coated articles comprising applying to a fibrous substrate an aqueous composition comprising a polyvinyl alcohol adhesive and a filler and thereafter drying the composition, the improvement wherein the adhesive comprises water-soluble polyvinyl alcohol having a degree of hydrolysis of at least about 99 percent and a 4 percent aqueous solution viscosity of 20° C. in the range of about 7.5 to 30 centipoises and wherein the instantaneous drying rate of the constant evaporation rate period of the drying step is 5–30 lbs. water/hr. ft.^{2}. Upon printing, the coated articles exhibit excellent mottle-free characteristics.

3,711,322
GLASS HAVING SEMITRANSPARENT COLORED COATING
Akira Kushihashi, Nishinomiya, and Naoyoshi Yamada, Itami, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan
Filed July 6, 1970, Ser. No. 52,254
Int. Cl. C03c *17/26*
U.S. Cl. 117—124 A **5 Claims**



A glass substrate having a thin semitransparent film of metal oxides thereon, said film containing oxides of (a) at least one of cobalt, chromium and iron, and (b) at least one of calcium and magnesium.

3,711,323
TEXTILE SIZE

Vernon Heap, Huddersfield, and Eric Rothwell, Bradford, England, assignors to Allied Colloids Manufacturing Company Limited, Bradford, England

No Drawing. Filed Aug. 17, 1970, Ser. No. 64,604
Claims priority, application Great Britain, Aug. 19, 1969, 41,310/69
Int. Cl. D02q *3/40;* B32b *27/08*
U.S. Cl. 117—138.8 F 7 Claims

The present invention relates to a copolymer of (a) acrylic acid and (b) an acrylate selected from the class consisting of sodium, potassium and ammonium acrylates, the molar ratio of (a) and (b) being from 1:0.3 to 1:6 and a 5% weight aqueous solution of the copolymer at 20° C. having a pH of 4.0 to 6.5 and a viscosity as measured by a Brookfield viscometer between 20 cps. when measured using a No. 1 spindle and 4000 cps. when measured using a No. 6 spindle, the spindle speed in both cases being 100 r.p.m. It also relates to aqueous solutions of such copolymers and their use as sizes for staple yarns.

3,711,324
METHOD OF FORMING A DIFFUSION MASK BARRIER ON A SILICON SUBSTRATE

William B. Glendinning, Belford, and Wellington B. Pharo, Neptune, N.J., assignors to the United States of America as represented by the Secretary of the Army

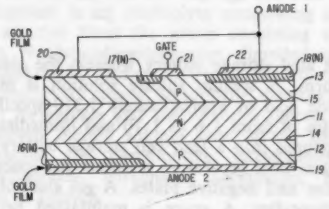
No Drawing. Filed Mar. 16, 1971, Ser. No. 124,915
Int. Cl. B44d *1/00, 1/18*
U.S. Cl. 117—201 2 Claims

A diffusion mask barrier is formed on a silicon substrate having a particular impurity profile by exposing the substrate surface to a chemical vapor environment of nitric oxide, hydrogen fluoride and water at about 35 degrees C., and for about 3 to 5 minutes to obtain an adherent film of about 1000 to about 3000 angstroms in thickness.

3,711,325
ACTIVATION PROCESS FOR ELECTROLESS NICKEL PLATING

Hanspeter Hentzschel, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 13, 1968, Ser. No. 783,667
Int. Cl. C23c *3/02*
U.S. Cl. 117—212 8 Claims



A silicon surface is prepared for electroless nickel plating by activation with an aqueous hydrofluoric acid solution containing from one to one hundred p.p.m. of ionic gold. Subsequent electroless deposition of nickel proceeds more uniformly over the entire silicon surface, and results in a more stable, tightly adhering nickel plate due to the improved activation step. Additional stability and even more reliable adhesion is obtained by a subsequent sintering of the composite structure above the gold-silicon eutectic temperature to alloy the gold activation film with the silicon. The sintering step is then preferably followed by a second electroless nickel plating step to build a nickel contact area of increased thickness.

3,711,326
PROMETHIUM SOURCES

Colin Parry, and Kenneth J. Round, both of Ottawa, Ontario, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada, a part interest

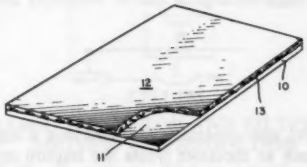
Filed June 16, 1969, Ser. No. 833,797
Claims priority, application Canada, Aug. 2, 1968, 026,548
Int. Cl. B44d *1/14*
U.S. Cl. 117—217 12 Claims

There is provided an apparatus and a method for the uniform deposition of the β emitting nuclide ^{147}Pm onto precisely defined areas. The technique both produces and deposits the emitting materials simultaneously without the need for separate preparation and purification of the metallic promethium.

3,711,327
PLASMA ARC SPRAYED MODIFIED ALUMINA HIGH EMITTANCE COATINGS FOR NOBLE METALS

Jack L. Blumenthal, Los Angeles, David F. Carroll, Torrance, and John R. Ogren, La Palma, Calif., granted to the United States Atomic Energy Commission under the Provisions of 42 U.S.C. 2182

Filed Jan. 4, 1968, Ser. No. 695,796
Int. Cl. C23c *3/04, 7/00*
U.S. Cl. 117—227 7 Claims



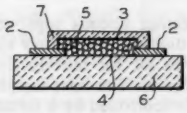
A method of applying a controlled emittance to a noble metal selected from the group including ruthenium, rhodium, palladium, osmium, iridium and platinum, and intra-alloys thereof. The coating is applied by plasma arc spraying modified alumina on a surface of one of the noble metals group, the alumina being modified by having alumina powder contain a dispersion of a noble metal black selected from the above group.

A cladding of one of the group of noble metals above, having a layer of plasma arc sprayed modified alumina bonded on at least one surface thereof, the alumina being modified as indicated in the above method.

3,711,328
RESISTOR PASTE

Mitsuo Wada, Masanari Mikoda, Masaki Aoki, and Tadashi Hikino, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 28, 1971, Ser. No. 110,681
Int. Cl. H01b *3/08, 3/12, 1/06*
U.S. Cl. 252—518 8 Claims



Novel resistor pastes are provided, which, on firing, form resistors with low differential in electrical resistance between the glass coated and uncoated form. The resistor pastes comprise, as a solid ingredient, 40 to 90% by

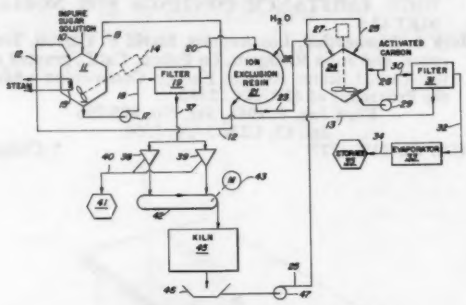
weight of a mixture consisting essentially of 20 to 92% by weight of finely divided cadmium oxide and 8 to 80% by weight of finely divided glass frit and 10 to 60% by weight of liquid vehicle, said finely divided glass frit consisting essentially of 0.1 to 17.0% by weight of Ag_2O and 83.0 to 99.9% by weight of a base composition which consists essentially of 60 to 80% by weight of PbO, 8 to 16% by weight of B_2O_3 and 12 to 24% by weight of ZnO.

3,711,329

SUGAR RECOVERY METHOD AND APPARATUS

James F. Zievers, La Grange, Ill., assignor to Industrial Filter & Pump Mfg. Co., Cicero, Ill.

Filed Feb. 22, 1971, Ser. No. 117,296
Int. Cl. C13d *3/14*
U.S. Cl. 127—9 12 Claims



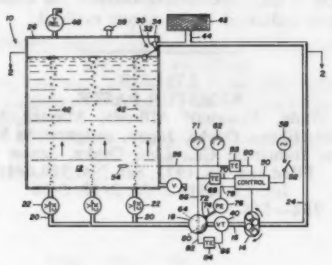
A method and apparatus for purifying a sugar bearing solution such as molasses treats the impure solution with bauxite prior to the passage thereof to an ion exclusion resin.

3,711,330

METHOD AND APPARATUS FOR HEATING VISCOUS SUGAR SOLUTIONS

Thomas A. Kierce, 724 E. Grauwyler Road, Irving, Tex. 75061

Filed Aug. 23, 1971, Ser. No. 174,087
Int. Cl. B65d *87/38*
U.S. Cl. 127—9 20 Claims



A system for heating viscous sugar-containing liquids includes a positive displacement rotary blower which both compresses and heats air for introduction into a storage container for the liquids. The inlet temperature of the air into the container is controlled by a throttling valve. Preferably the air being compressed is extracted from the free air space in the container holding the liquid. Various controls can be added to the system to render its operation automatic and dependent upon temperature and pressure conditions within the system.

3,711,331

METHOD OF MAKING AN IMPROVED ELECTRODE FOR DISCHARGEABLE CELL

Guy Rampel, Gainesville, Fla., assignor to General Electric Company

Division of Ser. No. 761,248, Sept. 20, 1968, abandoned. This application April 27, 1970, Ser. No. 43,274
Int. Cl. H01m *35/00*
U.S. Cl. 136—6 2 Claims

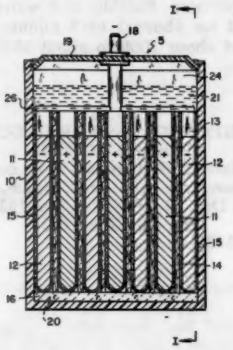
A method of making an improved electrode structure for rechargeable cells is provided. The current collector is positioned on an external surface of the electrochemically active material and that surface is placed adjacent a separator between the positive and negative electrode, thereby inhibiting deterioration of the separator which otherwise results from direct contact with the electrochemically active material of the electrode. Performance is improved and shelf life lengthened by slightly discharging the cell before storage, thereby placing a layer of the metal reduced from the electrochemically active material on the surface facing the separator adjacent the collector as a barrier between the active material of the electrode and the separator.

3,711,332

LEAD GEL STORAGE BATTERY

Simon Bastacky, 6604 Dalzell Place, Pittsburgh, Pa. 15217

Continuation-in-part of abandoned application Ser. No. 5,063, Jan. 22, 1970. This application Sept. 9, 1971, Ser. No. 179,000
Int. Cl. H01m *39/00*
U.S. Cl. 136—26 7 Claims



A lead acid storage battery wherein the electrolyte is in gel form. A sodium silicate solution is mixed with a sulphuric acid of approximately 1.310 specific gravity in the ratio of from 1:6 to 1:10 and immediately thereafter is poured into a lead cell storage battery in which porous glass fiber separators maintain the space between the positive and negative plates. A gel electrolyte forms shortly thereafter. A space is maintained between the gel and the top of the battery to accommodate a liquid phase which forms from the gel.

3,711,333

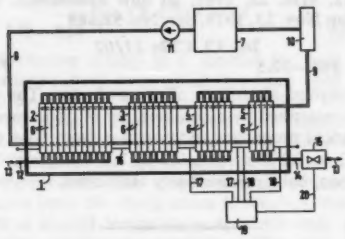
FUEL CELL BATTERY

Hans Kohlmuller, Erlangen, Germany, assignor to Siemens Aktiengesellschaft

Filed Sept. 2, 1971, Ser. No. 177,299
Claims priority, application Germany, Sept. 5, 1970, P 20 44 068.0
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 R 6 Claims

A fuel cell battery is divided into several electrically series connected blocks of fuel cells. These blocks and

the individual fuel cells within each block are connected with lines for an electrolyte-hydrazine fuel mixture and the gaseous oxidation agent, whereby during the operation of the fuel battery, the fuel cell elements within each block are traversed in parallel by the gaseous oxidation agent, while the individual blocks are traversed in series. All the fuel cells of the fuel cell battery are passed in



parallel by the mixture of electrolyte-hydrazine. The number of the fuel cells decreases per block, in flow direction of the gaseous oxidation agent and the flow rate of the gas in the oxidation agent supply line may be regulated by a valve situated at the gas outlet of the fuel cell battery, said valve being controllable by electrical signals obtained from a voltage comparison between various blocks.

3,711,334

LITHIUM-METAL MOLYBDATE ORGANIC ELECTROLYTE CELL

Arabinda N. Dey, Needham, and Robert W. Holmes, Boston, Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed July 15, 1970, Ser. No. 54,931

Int. Cl. H01m *17/02*

U.S. Cl. 136—100 R **4 Claims**

This invention relates to a novel primary electric cell comprising positive electrodes composed of any of the molybdates of silver, copper, iron, cobalt, nickel, mercury, thallium, lead, bismuth and their mixtures, negative electrodes composed of any of the light metals such as Li, Na, K, Ca, Be, Mg and Al, said electrodes being disposed in an electrolyte comprising an organic solvent selected from the group consisting of tetrahydrofuran, N-nitrosodimethylamine, dimethyl sulfite, propylene carbonate, gamma-butyrolactone, dimethyl carbonate, dimethoxy ethane, acetonitrile, dimethyl sulfoxide, dimethyl formamide and the mixtures thereof, and having dissolved therein soluble salts of the light metals, for example, the perchlorates, hexafluorophosphates, tetrafluoroborates, tetrachloro aluminates, hexafluoroarsenates of lithium.

3,711,335

BATTERY HAVING TERMINAL MOLDED IN WALL OF CONTAINER

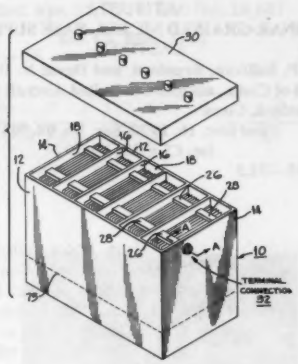
Fred P. Daniel, North Olmstead, Ohio, assignor to ESB Incorporated, Philadelphia, Pa.

Filed Feb. 12, 1971, Ser. No. 115,016

Int. Cl. H01m *5/00*

U.S. Cl. 136—135 S **5 Claims**

A battery has a terminal connection molded into the wall of the battery. The terminal connection has means that cooperate with a battery cable end connector so that the battery cable end connector can be connected to the terminal connection by a rotation of the cable end con-



nector. The terminal connection may be an integrally constructed extension of the strap connector to which it is joined.

3,711,336

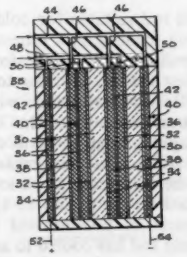
CERAMIC SEPARATOR AND FILTER AND METHOD OF PRODUCTION

Joseph S. Smatko, Santa Barbara, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Aug. 5, 1970, Ser. No. 61,383

Int. Cl. H01m *3/02*; C01g *23/00*; C04b *35/46*

U.S. Cl. 136—146 **22 Claims**



Production of a ceramic-like porous potassium titanate member having high strength, fine substantially uniform pore size and resistance to alkali, suitable for use as a battery separator, fuel cell membrane or filter medium, prepared according to one embodiment, by adding an organic binder, particularly a wax such as a polyethylene glycol wax (Carbowax), to potassium titanate fibers, compressing the resulting mixture into blocks, breaking and granulating said blocks into particles, compressing the granules into a member or sheet, slowly heating the resulting member at temperature of about 400 to about

600° C. to decompose the organic binder, and firing the resulting member or sheet at temperature ranging from about 1,000 to 1,370° C.

3,711,337

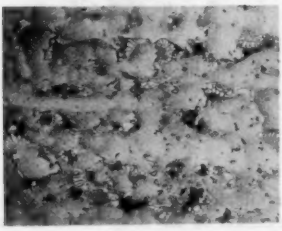
COLUMNAR-GRAINED NICKEL-BASE SUPERALLOY CASTINGS

Cornelius P. Sullivan, Branford, and David N. Duhl, Newington, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 16, 1970, Ser. No. 98,794

Int. Cl. C22c *19/00*

U.S. Cl. 148—32.5 2 Claims



The mechanical properties of columnar-grained nickel-base superalloy castings are improved by the addition of 1.5–3.5 weight percent hafnium to the alloy composition.

3,711,338

METHOD FOR COOLING AND SPHEROIDIZING STEEL ROD

Vito J. Vitelli, Shrewsbury, Mass., assignor to Morgan Construction Company, Worcester County, Mass.

Filed Oct. 16, 1970, Ser. No. 81,271

Int. Cl. C21d *7/14*

U.S. Cl. 148—12 9 Claims

Spheroidized steel rod suitable for cold working is obtained by hot rolling, cooling and reheating steel rod in direct sequence. Cooling through transformation is done immediately after hot rolling, in order to inhibit the full growth of the small austenite grains, which result from rolling, prior to transformation. The cooling through transformation is rapid enough to form constituents such as fine pearlite, bainite and martensite in substantial amounts to render the transformed rod too hard or brittle for the intended cold working, and to suppress substantially the development of proeutectoid ferrite. Directly thereafter, before said rod has cooled to ambient temperature, the rod is passed through a spheroidization furnace, while the rod is in the form of overlapping non-concentric rings, to heat the rod to a temperature of about 1280°–1330° F. (690–720° C.) at least until the cementite in the microstructure begins to coalesce into spheroidal particles. In one embodiment the rod is then cooled and stored for further treatment. In another embodiment it is maintained at the temperature of treatment until enlargement of the spheroidal particles occurs. The process is generally applicable to plain carbon and alloy steel rod which, for one reason or another, is not suitable without spheroidizing for certain cold-working procedures, and it provides a novel method of spheroidizing to obtain rapidly a uniformly annealed product.

3,711,339

ALUMINUM ALLOY CONDUCTOR

Fred A. Besel, Southbury, and William C. Setzer, Hamden, Conn., assignors to Olin Corporation

No Drawing. Continuation-in-part of application Ser. No. 66,067, Aug. 21, 1970, which is a continuation-in-part of application Ser. No. 885,315, Dec. 15, 1969, which in turn is a continuation-in-part of application Ser. No. 715,552, Mar. 25, 1968, all now abandoned. This application Nov. 23, 1970, Ser. No. 92,289

Int. Cl. C22c *21/02*

U.S. Cl. 148—32.5 7 Claims

An improved aluminum alloy conductor. The conductor is characterized by a combination of good mechanical and electrical properties and contains from 0.04 to 1.0% iron, 0.02 to 0.2% silicon, 0.1 to 1.0% copper, 0.001 to 0.2% boron, balance essentially aluminum.

3,711,340

CORROSION-RESISTANT HIGH-STRENGTH LOW-ALLOY STEELS

Michael Korchynsky, Bethel Park, and John R. Bell and Richard J. Cover, Pittsburgh, Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

No Drawing. Filed Mar. 11, 1971, Ser. No. 123,470

Int. Cl. C04b *35/70;* C22c *39/54*

U.S. Cl. 148—36 3 Claims

Low-alloy steels having five to eight times the atmospheric corrosion resistance of carbon steels, 80,000 p.s.i. minimum yield strengths and an overall desirable balance of mechanical properties produced directly off the hot-mill have the following chemistry: carbon, 0.4% to .10%; manganese, .40% to 1.80%; sulfur, .03% maximum; aluminum, .015% minimum; chromium, .90% to 1.20%; copper, .30% to .50%; silicon, .50% to 1.20%; phosphorus, .10% to .15%; columbium, .015% to .040%; and zirconium, .04% to .12% or a total content of rare earth elements, such as cerium and lanthanum, such that the weight ratio of total rare earths to sulfur is at least 2.8 to 1. In processing the steel to strip or plate, it is hot-rolled so as to have a finishing temperature between its A_3 temperature and 1700° F., cooled at a rate between 20° F./sec. and 45° F./sec. and coiled or piled at a temperature of 1100° F.±100° F.

3,711,341

METHOD OF MAKING SINTERED METAL ULTRASONIC BONDING TIPS

Kailash C. Joshi, Johnson City, and Franklin F. M. Lee, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 4, 1970, Ser. No. 33,998

Int. Cl. B22f *1/00*

U.S. Cl. 148—126 2 Claims

An ultrasonic bonding tip fabricated of sintered metal, preferably stainless steel. The tips are particularly useful in the bonding of wire and ultrafine wires to other conductive metal surfaces. The general method consists of compacting stainless steel powders and heating the compact in air at 1000° F for 20 minutes. The compact is then sintered in dissociated ammonia at 2000°–2350° F for one hour. The bodies are repressed and heated at 1500°–2000° F in an endo-thermal atmosphere followed by air cooling. The tips are then tempered and ground to final size. Optionally, they may be finally dipped in acid baths.

3,711,342

METHOD OF HEAT TREATING STEEL STRIP

Orville E. Cullen, 2728 Jodore Ave. 43606, and Joseph A. Lincoln, 3821 Driftwood Road 43614, both of Toledo, Ohio

No Drawing. Continuation-in-part of application Ser. No. 487,603, Sept. 15, 1965. This application May 23, 1969, Ser. No. 836,193

Int. Cl. C21d *1/26*

U.S. Cl. 148—134 10 Claims

This disclosure relates to a method for heat treating work hardened steel strip which has been cold reduced 40 to 80 percent and contains from 0.04 to 0.1 percent carbon. The strip is rapidly heated to a temperature to which austenite and ferrite exist under equilibrium conditions so that it retains appreciable work stresses when it reaches temperature. The strip is then maintained at such temperature until the work stress is relieved, and then is heated to a second temperature at which only austenite exists under equilibrium conditions. The strip is maintained at the second temperature until uniformity of grain size is achieved, after which the strip is cooled.

3,711,343

CELLULAR NITROCELLULOSE BASED COMPOSITION AND METHOD OF MAKING

Thomas E. Dunigan, Oak Ridge, George C. Sisco, Budd Lake, and Laurence W. K. Pell, West Orange, N.J., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Aug. 20, 1971, Ser. No. 173,676

Int. Cl. C06b *19/00*

U.S. Cl. 149—2 15 Claims

Novel, smokeless, combustible, consumable compositions are produced by mixing a nitrocellulose based explosive with an organic polyisocyanate in the presence of a liquid plasticizer at an elevated temperature.

3,711,344

PROCESSING OF CROSSLINKED NITROCELLULOSE PROPELLANTS

Everette M. Pierce, Somerville, Ala., assignor to The United States of America as represented by the Secretary of the Army

Filed Sept. 23, 1970, Ser. No. 83,257

Int. Cl. C06d *5/06*

U.S. Cl. 149—19 9 Claims

This invention relates to an improved process for crosslinking of nitrocellulose with an isocyanate to form a polymeric binder for a solid propellant grain. Gassing of the propellant grain is prevented, and reproducible propellant grains, with substantially void free properties, and having improved mechanical properties, are prepared.

3,711,345

CHEMICAL FOAMING OF WATER-BEARING EXPLOSIVES

Ernst A. Tomic, Hagerstown, Md., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 18, 1970, Ser. No. 64,793

Int. Cl. C06d *5/00, 1/04, 19/00*

U.S. Cl. 149—22 21 Claims

Making foamed semisolid colloidal dispersions of water-bearing blasting agents containing an inorganic oxidizing salt, e.g., ammonium nitrate, fuel, water and adding thereto an alkali metal borohydride gas-generating material that foams and sensitizes the blasting agent.

3,711,346

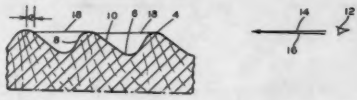
METHOD OF REPRODUCING WOOD GRAIN SURFACE CONFIGURATIONS

Elmer J. Landis, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Apr. 15, 1970, Ser. No. 28,687

Int. Cl. B44c *1/22*

U.S. Cl. 156—58 2 Claims



A sandblasted wood grain effect is desirable to reproduce in metal for engraving other materials. Oblique light is used to cast shadows on a piece of sandblasted wood. The axis of the light is shifted relative to the plane of the surface of the wood, and a series of photographs are taken. The series of photographs are then used to produce negatives. The negatives are used in a chemical milling process to etch the wood grain configuration into the metal plate.

3,711,347

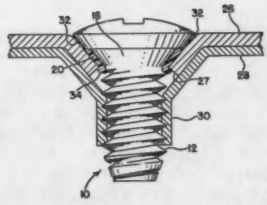
METHOD OF SEALING AND LOCKING A FASTENER

David Prugh Wagner, and John James Russell, both of 8501 W. Higgins Road, Chicago, Ill.

Division of Ser. No. 782,185, Dec. 9, 1968, abandoned. This application July 7, 1971, Ser. No. 160,497

Int. Cl. B32b *7/12*

U.S. Cl. 156—91 5 Claims



A fastener having an encircling mastic sealing and locking ring around the shank and positioned on or near the head of the fastener for sealing and locking the fastener in an apertured workpiece. The ring is formed of a compounded silicone resin capable of withstanding temperatures up to 400°F. for indefinite extended periods of time under vibrating conditions after final cure in situ, with the ring remaining dry and tack free, prior to final cure, at temperatures up to 180°F. or more.

3,711,348

METHOD OF MAKING MULTI-PLY CONVEYOR BELTING

Reinhold Reschke, Hannover-Buchholz, Germany, assignor to Hermann Berstorff Maschinenbau G.m.b.H., Hannover-Kleefeld, Germany

Filed Oct. 15, 1970, Ser. No. 81,105

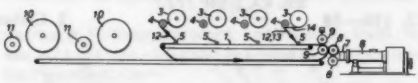
Claims priority, application Germany, Oct. 15, 1969, P 19 51 983.6

Int. Cl. B29h *7/22;* F16g *1/00*

U.S. Cl. 156—137 5 Claims

A plant for the manufacture of multi-ply conveyor belting includes two conveyor belts, a plurality of rolls each

for carrying an individually completed ply, a calender arrangement for coating base fabric webs with rubber and two rolls for carrying the completed belt. Initially, the plies are wound on to the ply-carrying rolls, are then

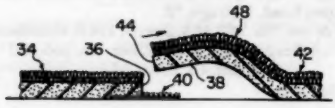


withdrawn simultaneously and passed through the calender arrangement, whereafter a rewind from one of the completed belt rolls via the calender enables an outer layer of rubber to be applied to the belt.

3,711,349
TAPE SEAMING METHOD

John M. Snyder, New York, and James J. O'Neill, Baldwin, N.Y., assignors to Commercial Affiliates, Inc., New York, N.Y.

Filed Jan. 28, 1970, Ser. No. 6,528
Int. Cl. B65h *69/02*
U.S. Cl. 156—157 **14 Claims**



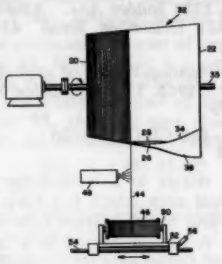
A tape seam for seaming two materials in edge abutting relationship in which the seam and the method for making the seam contemplates the use of an adhesive tape on which a first work piece, such as a piece of carpeting, or the like, is placed, and then rendering the balance of the adhesive on the face of the tape non-tacky for the interval of time required to place the second work piece in edge abutting relationship against the first work piece. After placing the two work pieces together in this manner, the adhesive on the tape under the second work piece becomes tacky again, finishing the seam. The tape itself may be double faced with adhesive so that it may hold the work pieces together and also hold the seam to a holding surface such as a ceiling, wall or floor.

3,711,350
PROCESS FOR THE FABRICATION OF COMPLEX CONTOURED BODIES

John Witzel, III, Cumberland, Md., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 10, 1969, Ser. No. 883,729
Int. Cl. B65h *81/02*
U.S. Cl. 156—169 **16 Claims**

A process for fabrication of preforms for complex contoured bodies is provided. In this process a pattern is prepared from the complex contoured body by first securing a covering to the surface of the body and then describing a continuous path on this covering so that a pattern can be recovered by cutting the covering along the continuous path. The pattern recovered has an interior edge, an exterior edge, a forward-end and an aft-end. The continuous path is described so that the width of the pattern is a constant. Filaments can then be laid by any suitable method in side-by-side relationship lengthwise of the pattern. The filaments covering the interior and exterior edges of the pattern are substantially parallel with

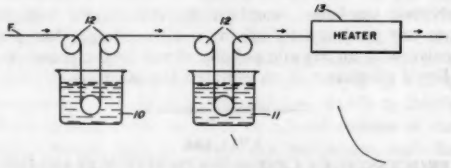


these edges. The filaments are bound together with a resin providing a self-supporting preform for a complex contoured body.

3,711,351
METHOD OF IMPREGNATING INORGANIC FILAMENT STRANDS

James R. Griffith, Riverdale Heights, Md., assignor to the United States of America as represented by the Secretary of the Navy

Original application May 31, 1967, Ser. No. 643,321, now Patent No. 3,544,421, dated Dec. 1, 1970. Divided and this application Sept. 9, 1970, Ser. No. 70,808
Int. Cl. B32b *17/04*
U.S. Cl. 156—175 **3 Claims**



Glass filaments are continuously drawn through a solution of bifunctional acyl chloride in organic solvent and then directly through a solution of alkylene diamine and an acid acceptor in water. The filaments are dried, coated with epoxy resin and wound to form a structural laminate.

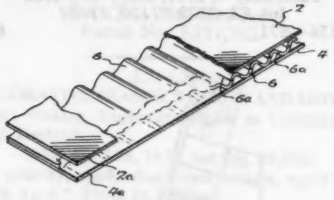
3,711,352
FLUTE SEALING METHOD

William O. Wagers, Smithville; Robert H. Frappier, Wooster, both of Ohio; William S. McDonald, Georgetown, S.C., and Charles L. Boggs, Statesville, N.C., assignors to International Paper Company, New York, N.Y.

Division of Ser. No. 721,739, April 16, 1968, Pat. No. 3,563,843. This application Sept. 14, 1970, Ser. No. 71,865
Int. Cl. B31f *1/00*
U.S. Cl. 156—202 **3 Claims**

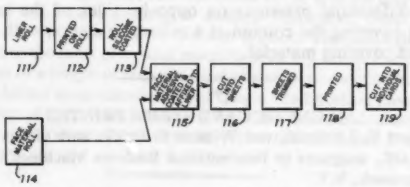
A closed edge corrugated core paperboard in which the corrugated core of the board is closed by slitting and compressing the corrugated core edge and by folding the edges of the facing sheets, left projecting after the core is crushed, one folded extending edge folded over the other folded extending edge, and adhesively securing the folded edges together; the method for producing such board including the steps of slitting and crushing the end of the core, folding the edges of the facing sheets, one over the other, and adhesively securing the folded edges of the facing sheets to each other; and, the apparatus for producing such board and for carrying out such method,

which apparatus includes rotating slitter knives for slitting the end of the corrugated core, means for compressing the slit end



and means for folding the extending facing sheet edges, one over the other, and for adhesively securing the folded edges to each other.

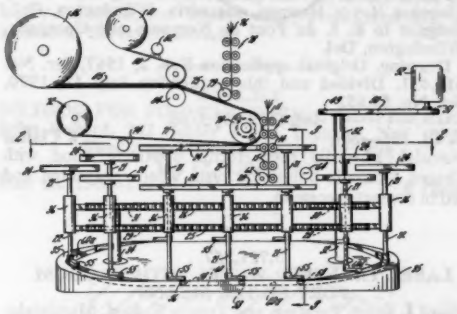
3,711,353
METHOD OF PRODUCING HIDDEN REGISTERED PRINTING
Karl R. Zimmer, 7750 N. College Ave., Indianapolis, Ind. 46240
Continuation-in-part of abandoned application Ser. No. 708,115, Feb. 26, 1968. This application Oct. 22, 1970, Ser. No. 83,119
Int. Cl. B32b *31/12, 31/18*
U.S. Cl. 156—267 **6 Claims**



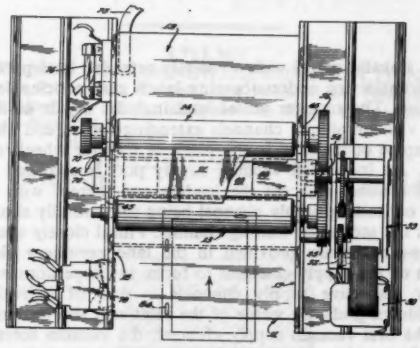
A method of registering printing on a release liner covered with face material. The hidden printing is first printed on a roll of liner material. Eyespots are also printed adjacent one edge of the liner material. The roll is then silicone coated and laminated with a second roll of face material. The face material covers the printing except for the eyespots. A reading device triggers on the eyespots activating a cutter severing the laminated material into individual sheets. The laminated sheets are then trimmed and printing of the top surface of the face material of the laminated sheets is accomplished. The sheets can then be cut into individual cards.

3,711,354
CROSSLAYING MACHINE
William H. Burger, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Sept. 2, 1969, Ser. No. 854,552
Int. Cl. B32b *31/04, 31/18*
U.S. Cl. 156—269 **9 Claims**

A method for efficiently handling and crosslaying webs of substantially aligned light weight fibers in the production of nonwoven materials incorporating such crosslaid fibers for two-dimensional strength. Webs of substantially aligned fibers are deposited on individual moving tables with their fibers oriented in the direction of travel. The tables are moved around an oval path with a cam follower secured at the lower end of each table riding in an oval cam track. The cam track causes each table to rotate 90° as it moves around one end of the oval path so that the web fibers are oriented transversely to their direction of travel. To permit rotation of adjacent tables without interference, the ends of the oval cam track are inclined so that the tables are spaced vertically with respect to each other during rotation. The transversely oriented webs are then successively removed from the moving tables and crosslaid on another moving medium to form a composite nonwoven material.



3,711,355
LAMINATOR
Henry N. Staats, Deerfield, and Maurice D. Levitan, Wilmette, Ill., assignors to General Binding Corporation, Northbrook, Ill.
Filed Apr. 17, 1970, Ser. No. 29,559
Int. Cl. B32b *31/04*
U.S. Cl. 156—499 **5 Claims**



A compact laminating device for applying heat and pressure to a sandwich of materials to be laminated together. A highly efficient material transfer and heat application system is constructed of a minimum of moving parts and the stationary components are manufactured of simple extrusions. A pre-formed laminating sandwich with

a thermal and pressure equalizer is employed in combination to provide an essentially wrinkle-free and air bubble-free laminated product.

3,711,356

METHOD OF MAKING A COMPOSITE STRUCTURE OF AN AROMATIC POLYIMIDE RESIN AND NOVOLAK PHENOLIC RESIN

Alva L. Herman, deceased, late of Wilmington, Del., by Florence Royce Herman, executrix, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application Feb. 2, 1967, Ser. No. 613,431. Divided and this application July 13, 1970, Ser. No. 54,652

Int. Cl. C09j *5/00*

U.S. Cl. 156—306 8 Claims

Novolak phenolic resin forms a strong bond with coalesced aromatic polyimide resin when compacted and cured in contact therewith.

3,711,357

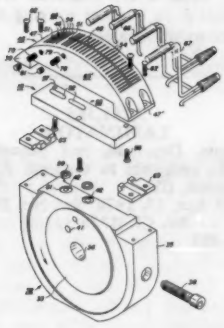
LABEL TRANSFER WHEEL WITH VACUUM PORT FILTER MEANS

Richard J. Ernst, Palatine, and Trygve R. Rod, Mundelein, Ill., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 5, 1971, Ser. No. 103,968

Int. Cl. B65c *9/14*

U.S. Cl. 156—556 1 Claim



A transfer wheel with a radially extended land portion for transferring address-bearing labels onto articles being labeled. The transfer wheel land includes a pair of slot-like vacuum supply channels extending end to end along the spine of the land in the plane of transfer wheel rotation. An individual vacuum supply port is provided for each channel adjacent the leading end thereof with the first or leading supply channel being substantially shorter than the second or trailing channel. Plural closely spaced cross-grooves are provided in the land periphery along each of the supply channels to form, in cooperation with their respective supply channels, a pair of individual holddown grids. By virtue of the relatively shorter length of the first vacuum supply channel, the vacuum force at the first grid is greater to facilitate initial attraction and attachment of the label to the land. The trailing second grid serves to sustain progressive and tight fastening the label to the land without buckling. To prevent, particularly in applications where heat activated adhesives are used, foreign material and adhesive particles from entering the vacuum supply ports and blocking or restricting the admission of vacuum to the holddown grids, a filter is provided in each port adjacent the inlet thereto.

3,711,358

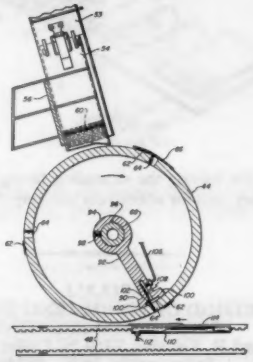
ASSEMBLY FOR APPLYING COUPONS TO CARTON BLANKS

John Alexander and Leonard Adams, Jr., Louisville, Ky., assignors to The Finn Industries, Inc., Chicago, Ill.

Filed May 4, 1970, Ser. No. 34,253

Int. Cl. B32b *31/20, 31/04*

U.S. Cl. 156—571 6 Claims



A machine for applying coupons to paperboard cartons by delivering the coupons one at a time from a supply station onto a moving drum surface, holding the coupons thereagainst with reduced pressures within the drum, interrupting the holding effect of the reduced pressure at a remote transfer station, blowing the coupons off the cylindrical surface at the transfer station, inducing movement of the coupon to the paperboard carton blank by differential pressures on opposite sides of the carton, and covering the coupon at a mounting station with oversized covering material.

3,711,359

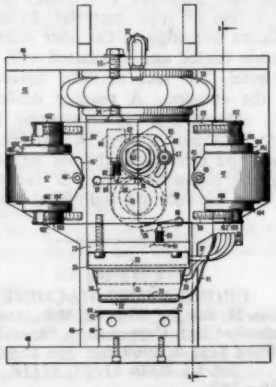
MAGNETIC CARD STRIPE PRINTER

Robert E. Lawhead, and William E. Steele, both of San Jose, Calif., assignors to International Business Machines Corp., Armonk, N.Y.

Filed May 11, 1970, Ser. No. 36,148

Int. Cl. B32b *31/20, 31/26*

U.S. Cl. 156—583 7 Claims



An apparatus for applying a precisely controlled pressure and temperature to a work station. A hot punch comprises first and second heating elements and a thermistor. The first element operates at a fixed voltage and the second element operates at a voltage responsive to said thermistor. A clutch and cam arrangement actuates the hot punch and controls

pressure time. An air spring applies a constant force against said hot punch for controlling the pressure at the work station.

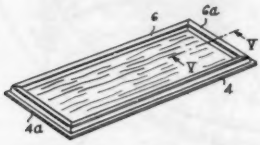
ERRATUM

For Class 156—219 see:
Patent No. 3,711,362

3,711,360
DECORATIVE PLASTICS STRIPS AND MOTIFS

Cecil Kent, Woking, England, assignor to Creators Limited, Woking, England

Filed April 16, 1970, Ser. No. 29,046
Claims priority, application Great Britain, April 22, 1969, 20,601/69; April 7, 1970, 16,524/70
Int. Cl. B32b *1/04, 3/02*
U.S. Cl. 161—44 6 Claims

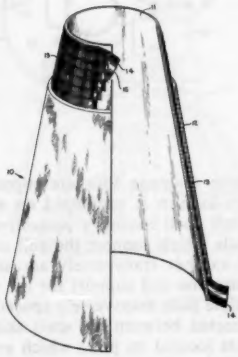


This invention relates to decorative plastics strips and motifs suitable for securing by high frequency welding to a base surface. The decorative strip comprises an extruded plastics strip consisting of a central tape-like web portion along each side of which is a bead portion which projects above the front face of the web portion, each bead portion having a thin and narrow welding flange projecting outwardly from the back edge thereof in the plane of the web portion. A strip of material providing a desired decorative finish is bonded to the front face of the web portion. The decorative motif is in the form of a panel made by securing across each of the ends of a length of the twin-beaded strip, a piece of an auxiliary plastics strip material comprising a bead portion having the shape of one of the bead portions of the twin-beaded strip. The bead portions of the strips have a metallised finish or appearance.

3,711,361
EXPANSION PERMITTING ARRANGEMENT AND METHOD OF JOINING MEMBERS

James L. Casadevall, Orlando, Fla., assignor to Martin Marietta Corporation, New York, N.Y.

Original application July 7, 1967, Ser. No. 651,771, now Patent No. 3,551,268, dated Dec. 29, 1970. Divided and this application Oct. 27, 1970, Ser. No. 84,483
Int. Cl. B31c *13/00;* B32b *1/08, 1/10, 5/12, 7/04*
U.S. Cl. 161—47 4 Claims

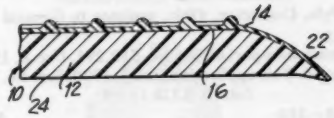


This invention relates to the use of a novel cross-fibered tape by the use of which a wide variety of structural temperature-resistant materials can be joined together. This tape can consist of a large number of short fibers, such as of fiberglass, that are held together by a center member extending the length of the tape, but leaving both ends of the fibers free and therefore available to be joined such as by adhesive means is the two materials that are to be accured together. Even though relative motion takes place between the two materials, due for example to heating effects, the tiny fibers serve in a highly advantageous manner to prevent complete separation of the two materials.

3,711,362
METHOD FOR FORMING WEDGE SHAPED EDGE

Jules Ballard, 262 Schley Place, Teaneck, N.J. 07666

Filed Aug. 17, 1971, Ser. No. 172,508
Int. Cl. B29c *27/04*
U.S. Cl. 156—219 6 Claims

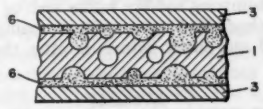


To make a mat of foam or sponge elastomer, a vinyl or thermoplastic film is superposed on a foam or sponge layer which is placed on a platen and a die is brought down against the same. The die is heated by means of an internal electrical resistance or steam or the like and causes the upper surface section of the foam or sponge layer to fuse and bond to the film. The die has edge portions capable of providing a wedge shaped peripheral edge on the resulting mat and a high frequency energy is passed through the resulting mat particularly at the peripheral edge thereof in order to control the shape or profile of the edge. The die is provided with channels or grooves capable of impressing ridges into the upper surface of the mat and use is made of these grooves to permit the evacuation of air from between the film and the sponge or foam layer by operating the die in sequential pressure stages in the first stage of which a relatively low pressure is employed.

3,711,363
FOAMED CORE SANDWICH CONSTRUCTION

Chester P. Jarema, Detroit, and Leonard M. Niebylski, Birmingham, Mich., assignors to Ethyl Corporation, New York, N.Y.

Filed Apr. 21, 1970, Ser. No. 30,469
Int. Cl. B32b *3/26, 15/08*
U.S. Cl. 161—161 19 Claims

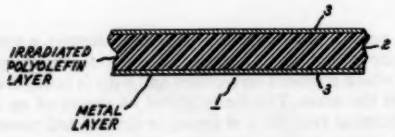


A sandwich panel construction comprising two independent outer sheets attached to opposite sides of a foamed metal core. Compared to known sandwich panel construction, the present panels are lightweight, dimensionally stable, strong, fire resistant and resistant to deterioration caused by atmospheric conditions and ordinary aging.

3,711,364
SAFETY GLASS
Leo Ahramjian, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of abandoned application Ser. No. 631,623, Apr. 16, 1967. This application Mar. 20, 1970, Ser. No. 21,543
Int. Cl. B32b *17/04, 27/40*
U.S. Cl. 161—190 3 Claims

A safety glass wherein two layers of glass have an interlayer disposed between them of polyurethane elastomer of (a) polytetramethylene ether glycol having a number average molecular weight of about 800 to 2000, (b) 1,4-butanediol, and (c) 2,4-tolylene diisocyanate or mixtures thereof containing up to about 35 weight percent 2,6-tolylene diisocyanate, the quantities of reactants being about 2 to 3.5 moles of butanediol per mole of said glycol, and approximately equivalent amounts of said diisocyanate.

3,711,365
METAL-CLAD LAMINATES
James J. Pyle, Coshocton, Ohio, assignor to General Electric Company
Continuation-in-part of Ser. No. 512,291, Dec. 8, 1965, abandoned. This application Jan. 5, 1970, Ser. No. 774
Int. Cl. B32b *15/08*
U.S. Cl. 161—216 6 Claims



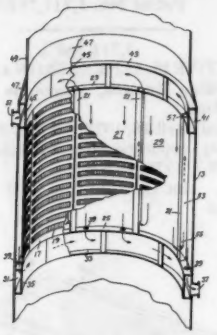
A metal clad plastic laminate is made by laying up a plurality of thin layers of irradiated polyolefin, such as polyethylene, and a metal layer is superimposed over at least one side of the lay-up. The resulting lay-up is then compressed.

3,711,366
DIGESTING LIGNOCELLULOSIC MATERIAL WITH SODIUM HYDROXYMETHYLSULFONATE
Junzo Nakano, Yuichiro Sumi, and Makoto Nagata, Tokyo, Japan, assignors to The Kokusaku Pulp Industry Co., Ltd., Tokyo, Japan
No Drawing. Continuation-in-part of application Ser. No. 657,526, Aug. 1, 1967. This application Sept. 22, 1970, Ser. No. 74,469
Claims priority, application Japan, Aug. 3, 1966, 41/50,503
Int. Cl. D21b *1/16*
U.S. Cl. 162—24 5 Claims

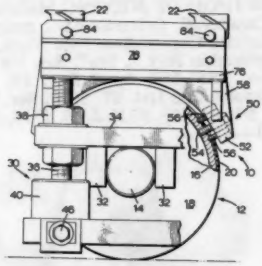
Improvement in a process for manufacturing high yield pulp in which cooking treatment and mechanical defibration for lignocellulosic material are combined, said cooking treatment being carried out in alkaline condition employing a sulfomethylation agent which is produced from admixing sodium sulfite and/or sodium bisulfite, formaldehyde and water, said mechanical defibration being carried out either before or after the cooking.

3,711,367
SCREENING DEVICE IN CELLULOSE DIGESTERS
Per Tyke Christenson, Karlstad, Sweden, assignor to Kamyr Aktiebolag, Karlstad, Sweden
Filed Feb. 9, 1971, Ser. No. 113,962
Claims priority, application Sweden, Feb. 11, 1970, 1,734/70
Int. Cl. B01d *29/36*
U.S. Cl. 162—251 9 Claims

A filtrate chamber back of a cylindrical screen girdle inserted in a cellulose digester is divided by vertical partitions into compartments. An internal manifold or header located axially adjacent and coaxial to said filtrate chamber communicates with said compartments through narrow apertures. A second similar manifold may be provided on the other side of the screen girdle, the filtrate chamber compartments being alternately connected to the lower and the upper manifold.



3,711,368
ROLL SUPPORT FOR PAPER MACHINE DRAINAGE FOILS
Leslie Truxa, Montreal, Quebec, Canada, assignor to Dominion Engineering Works, Limited, Lachine, Quebec, Canada
Continuation-in-part of application Ser. No. 758,306, Sept. 9, 1968. This application Oct. 30, 1970, Ser. No. 85,828
Claims priority, application Canada, Sept. 27, 1967, 1,062
Int. Cl. D21f *1/36*
U.S. Cl. 162—354 3 Claims

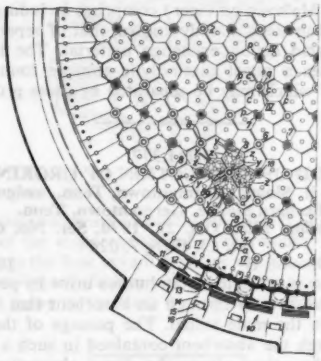


Paper machine drainage foils are supported on a foil platform which in turn is supported on a roll assembly comprising a roll shell having a protective rubber cover and roll journals which support the roll shell at its ends. The roll shell extends transversely across the fill width of the paper machine and support for the platform is obtained by multiple pads transversely spaced along the roll shell and connected between the shell and the platform. Adjustment nuts located on posts which are connected to the roll journals function to control the vertical positioning of the roll shell and foils in relation to the Fourdrinier wire.

3,711,369
CHARGE/DISCHARGE ARRANGEMENTS FOR NUCLEAR REACTOR

John Pugh, Winfrith, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Dec. 23, 1969, Ser. No. 887,668
Int. Cl. G21c *19/20, 5/08*
U.S. Cl. 176—30 7 Claims

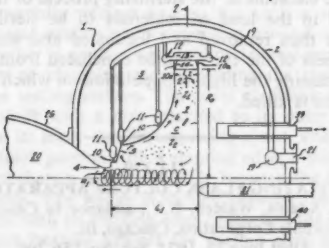


A gas cooled nuclear reactor has its core composed of columns of blocks of moderator material which incorporate the nuclear fuel; fuel and moderator being recharged as a unit. According to this arrangement there are a number of longitudinal plugs which are located between adjacent groups of columns which fix the inter-column clearance during core operation so as to ensure a stable assembly. For refueling one of the plugs is withdrawn and an adjacent block may then be removed but a keeper is inserted to hold back blocks neighbouring the void so created, and to keep other blocks from being displaced into the void. The keeper may either be a part of the charge machinery or a separate component.

3,711,370
COLLOIDAL-GAS CORE REACTOR

Hans J. P. von Ohain, Dayton, Ohio, and Melvin R. Keller, Pittsburgh, Pa., assignors to The United States of America as represented by the Secretary of the Air Force

Filed Jan. 13, 1970, Ser. No. 2,597
Int. Cl. G21c *3/44*
U.S. Cl. 176—45 8 Claims

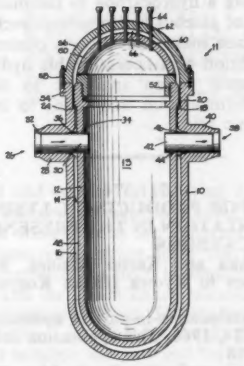


A colloidal-gas core nuclear reactor having a high tensile strength outer semispheroidal pressure shell enclosing a moderator body member which surrounds a central cavity with an expanding exit nozzle at one end thereof. The cavity wall has a gradually increasing radius from the nozzle end in a direction upstream within the cavity. A hydrogen gas manifold is positioned at the maximum radius of the cavity and supplies gas to the cavity through a plurality of annularly positioned swirl vanes. Additional hydrogen gas is supplied to the cavity with a tangential component through nozzles positioned in a plurality of positions of the cavity wall adjacent the exit nozzle to prevent the flow of nuclear particles along the forward wall boundary layer to the exit nozzle.

3,711,371
NUCLEAR REACTOR VESSEL STRUCTURE

William J. Cahill, Jr., West Nyack, N.Y., assignor to Consolidated Edison Company, New York, N.Y.

Continuation of abandoned application Ser. No. 687,548, Dec. 4, 1967. This application Jan. 6, 1971, Ser. No. 104,505
Int. Cl. G21c *13/02*
U.S. Cl. 176—50 11 Claims



A nuclear reactor pressure vessel structure having an inner vessel containing coolant fluid under pressure and completely encased within an outer vessel, the inner vessel being mounted in spaced relationship with respect to said outer vessel, and fluid under pressure equal to that of said coolant fluid disposed within said spacing between the vessels; fluid passages between said spacing between the vessels and the inside of said inner vessel whereby the fluid within said spacing is said coolant fluid.

3,711,372
PROCESS FOR THE PRODUCTION OF MICROBIAL CELLS

James J. Donnelly, Cinnaminson, N.J., assignor to Mobil Oil Corporation

Filed July 15, 1970, Ser. No. 54,987
Int. Cl. C12b *1/00*
U.S. Cl. 195—1 19 Claims

A process for the production of microbial cells wherein oxygen is separated from air and the oxygen is employed for partial oxidation of hydrocarbonaceous material to produce hydrogen and carbon dioxide. The hydrogen and the carbon dioxide are then employed as a substrate for the growth of microbial cells. The nitrogen obtained as by-product from the oxygen separation is employed to produce ammonia. This ammonia is employed per se to supply at least part of the nitrogen required for growth of the microbial cells. The ammonia may also be employed to form urea by reaction with part of the carbon dioxide obtained by the partial oxidation of the hydrocarbonaceous material and the urea employed to supply at least part

of the nitrogen required for growth of the microbial cells. The microbial product is concentrated or dried by one or more stages of evaporation. At least part of the heat produced during growth of the microbial cells is removed by indirect heat exchange between the aqueous liquid culture medium containing the cells and the water vaporizing in the evaporators.

3,711,373

PROCESS FOR PRODUCING L-GLUTAMIC ACID

Katsunobu Tanaka, Kazuo Kimura, and Masaki Yamamoto, Machida-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Filed Feb. 20, 1969, Ser. No. 801,163
Claims priority, application Japan, Mar. 9, 1968, 43/14,944
Int. Cl. C12b *1/00*
U.S. Cl. 195—28 R **6 Claims**

A process for producing L-glutamic acid by fermentation inexpensively on an industrial scale which comprises culturing *Corynebacterium alkanum* ATCC 21194, *Brevibacterium paraffinolyticum* ATCC 21195 or *Brevibacterium butanicum* ATCC 21196 in an aqueous nutrient medium containing a hydrocarbon as the main source of carbon. The use of gaseous hydrocarbons such as ethane, propane and butane makes the process commercially attractive. The addition of a non-utilizable hydrocarbon, a surface active agent or an antibiotic to the medium accelerates the fermentation and helps to increase the yield of L-glutamic acid.

3,711,374

PROCESS FOR PRODUCING L-LYSINE BY FERMENTATION IN THE PRESENCE OF HYDROCARBONS

Katsunobu Tanaka and Kazuo Kimura, Machida-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Continuation-in-part of aplication Ser. No. 574,526, Aug. 24, 1966. This application July 15, 1968, Ser. No. 744,698
Claims priority, application Japan, Mar. 18, 1969, 44/55,376
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 R **6 Claims**

A process for producing L-lysine by fermentation. The process is conducted by culturing a microorganism capable of producing L-lysine. The microorganism is a mutant strain which requires homoserine or both threonine and methionine for its growth. The culturing is effected under aerobic conditions in an aqueous nutrient medium containing at least one hydrocarbon as the major source of carbon.

3,711,375

PROCESS FOR PRODUCING L-THREONINE

Kiyoshi Nakayama, Sagamihara-shi, Haruo Tanaka, Machida-shi, and Hiroshi Kase, Koganei-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Continuation of abandoned application Ser. No. 698,424, Jan. 17, 1968. This application June 14, 1968, Ser. No. 736,979
Claims priority, application Japan, Jan. 21, 1967, 42/3,862
Int. Cl. C12b *1/00*
U.S. Cl. 195—29 **11 Claims**

A process for producing L-threonine by fermentation which comprises culturing an L-threonine-producing microorganism under aerobic conditions in an aqueous nutrient medium containing a decomposate of the cell bodies of diaminopimelic acid-containing microorganisms. The decomposate acts as a substitute for diaminopimelic acid itself, it being obtained, for example, by the hydrolysis of diaminopimelic acid-containing microorganisms.

3,711,376

COAGULANTS

Mark W. C. Hatton, London, England, assignor to Twyford Laboratories Limited, Alperton, Wembley, Middlesex, England

No Drawing. Filed June 29, 1970, Ser. No. 50,938
Claims priority, application Great Britain, July 4, 1969, 33,780/69
Int. Cl. C07g *7/026*
U.S. Cl. 195—62 **11 Claims**

An improvement in the process for purifying the anticoagulant enzyme from the venom of *Ancistrodon rhodostoma* (the Malayan pit viper) comprises including, among the separation steps already known, that of separation on a weakly acid cation exchange material. The invention also includes a novel caseinolytic enzyme found in the venom and which may be separated by these procedures.

3,711,377

METHOD OF PRODUCTION OF UROKINASE

Nathan H. Sloane, Germantown, Tenn., assignor to Barbara Sloane, Germantown, Tenn.

No Drawing. Filed Oct. 22, 1970, Ser. No. 60,162
Int. Cl. C07g *7/026*
U.S. Cl. 195—66 B **10 Claims**

Urokinase is extracted from human urine by passing the voided urine directly through an absorbent that is placed in a tray in the male urinal. The passage of the voided urine through the absorbent contained in such a filtering device in the urinal allows the direct absorption of the enzyme activator, urokinase, onto the absorbent without collecting bulk urine; and the system allows the passage of the absorbed urine (freed of its urokinase) to flow directly into the sewer system. The absorbents used in this system are: Florisil, charcoal, aluminum oxide, denatured human proteins embedded in a Silastic matrix. The urokinase is solubilized from these absorbents and further purified. Urokinase is removed from Florisil, charcoal and aluminum oxide by cold weak acid saturated with ethyl methyl ketone. Urokinase is removed from the Silastic embedded absorbents, denatured human proteins.

3,711,378

MICROBIOLOGICAL-SCALED STERILITY CONTROLS

Karl Kereluk, Fairview, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Sept. 15, 1969, Ser. No. 857,668
Int. Cl. C12k *1/04*
U.S. Cl. 195—103.5 R **14 Claims**

A method and apparatus for determining the effectiveness of a sterilizing cycle by preparing a plurality for example seven spore impregnated strips of filter paper sealed in glassine envelopes and exposing the strips to the sterilizing cycle under study. Each of the seven strips has a different spore population, e.g. 10^3, 10^4, 10^5, 10^6, 10^7, 10^8, and 10^9. The sterility control is either exposed directly to the active elements of the sterilizing process or the control is placed in the load of materials to be sterilized. The strips are then removed and incubated and studied. The effectiveness of the cycle can be concluded from the spore strip containing the highest population on which the entire population is killed.

3,711,379

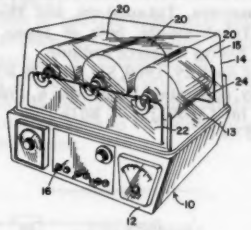
ROTATING FLASK CULTURE APPARATUS

Robert P. Adams, Walden, N.Y., assignor to Cenco Medical Health Supply Corporation, Chicago, Ill.

Filed June 24, 1971, Ser. No. 156,200
Int. Cl. C12b *1/00*
U.S. Cl. 195—127 **18 Claims**

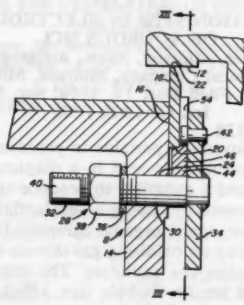
An apparatus for the cultivation and investigation of cell and virus growth for the production of vaccines, hormones

and antigens which supports flasks in which such cultures are grown at their neck and bottom only so that such flasks are suspended above the base of the apparatus along the culture growing surface. An apparatus which rotates these flasks with respect to these two points of support by drive wheel means engaging the bottom of the flasks. A culture flask apparatus



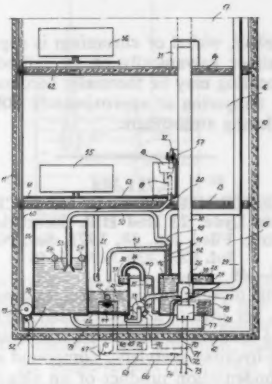
having releasable spring means exerting a force along the central axis of the stopper disposed in the mouth of the flask which forces the flask toward the drive wheel means at its bottom and having a surface supporting the flask stopper in bearing which prevents the flask stopper from rotating with the flask.

3,711,380
COKE OVEN DOOR STRUCTURE
Alfred Teplitz, Pittsburgh, Pa., assignor to United States Steel Corporation
Filed Apr. 1, 1971, Ser. No. 130,143
Int. Cl. C10b *25/06*
U.S. Cl. 202—248 **10 Claims**



A coke oven door structure includes a door jamb having an outwardly facing flat sealing surface around its periphery, a rigid frame member having a peripheral surface substantially normal to said flat sealing surface, a flexible metal sealing strip extending around said door frame member in contact with said peripheral surface, and a plurality of clamping means holding the sealing strip against the sealing surface. The novel clamping means includes a shaft with a disc attached to its outer end and threads on its inner end for receiving a nut, and a wedge having a thick portion with a slanting edge, a thin portion with a slot therein and a shoulder between the thick and thin portions. The wedge is located between the disc and door frame with its slanting edge contacting the shaft and its shoulder bearing against the sealing strip to hold it against the sealing surface. The disc has a pin attached to it parallel to the shaft. The pin is secured in the slot so that turning of the shaft causes the wedge to hold the sealing strip against the sealing surface. Tightening of the nut prevents movement of the shaft and wedge.

3,711,381
METHOD OF PURIFYING SEWAGE AND WASTE LIQUIDS AND A DECOCTING SYSTEM FOR CARRYING OUT THE METHOD
Göran Emil Lagström, Essingeringen 72C, Stockholm, Sweden
Filed Dec. 3, 1970, Ser. No. 94,862
Claims priority, application Sweden, Dec. 10, 1969, 17,073
Int. Cl. C02b *1/02*; C02c *1/38*
U.S. Cl. 203—20 **26 Claims**



A method and system for purifying domestic effluent, wherein the effluent is cooked in a boiler to cause a foam in which the contaminants are collected. The foam and steam are removed together from the boiler and later separated, whereafter the foam is conducted to a sedimentation tank and the steam either released to atmosphere or used as a source of heat. The sludge obtained in the sedimentation tank as the foam breaks down is removed therefrom at suitable intervals and fed back to the boiler together with fresh effluent arriving from the various conveniences.

3,711,382
BIMETAL SPINEL SURFACED ELECTRODES
Paul P. Anthony, Wadsworth, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 43,377, June 4, 1970. This application Jan. 15, 1971, Ser. No. 106,840
Int. Cl. B01r *1/00, 3/06*
U.S. Cl. 204—1 R **34 Claims**

Electrodes suitable for electrolytic purposes, for example, as anodes in the electrolysis of aqueous alkali metal chlorides, are disclosed. The electrodes of this invention comprise spinel outer surfaces on electroconductive substrates. The electrodes of this invention have a low overvoltage and are long lived in the electrolytic cell environment.

3,711,383
METHOD OF MAKING CONTACT POINT COATING FOR RELAY CONTACTS
Manfred Schiekel, Helmut Sussenbach, and Ingo Eichhorst, Ulm (Danube), Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany
Filed Aug. 27, 1971, Ser. No. 175,626
Claims priority, application Germany, Aug. 28, 1970, P 20 42 700.3–33
Int. Cl. C03b *5/50, 5/52*
U.S. Cl. 204—29 **4 Claims**

A method of producing the contact point coating for a relay contact of the type wherein the contact is made of an iron-nickel alloy, e.g. as used in reed and similar type

relays. A layer of gold is initially applied to the contact point of the contact and the contact is then tempered at a temperature between 700 and 1000° C. Thereafter, a layer of a two-component alloy consisting essentially of gold

and either cobalt, nickel or chromium is deposited on the gold layer either galvanically or by cathode sputtering. Finally the coating may be thermally hardened by a short time further tempering at approximately 800° C. preferably in a reducing atmosphere.

3,711,384

ELECTRODEPOSITION OF NICKEL

Derek Martin Lyde, 23 Red Hill, Stourbridge, England

No Drawing. Filed Jan. 20, 1971, Ser. No. 108,210
Int. Cl. C23b *5/08, 5/46*
U.S. Cl. 204—49 19 Claims

An aqueous nickel plating electrolyte compirses (a) at least 30 gm. per litre of a nickel-II salt; (b) 0.1–1.0 gm. per litre of a mixture of acetylenic compounds including both an alfa-hydroxy-acetylenic compound and an alkylene oxide condensation product of an alfa-hydroxy-acetylenic compound in a weight ratio of the said condensation products to the alfa-hydroxy-acetylenic compounds of from 1.5:1 to 7:1; and (c) from 1.0 to 5.0 gm. per litre of saccharin or a substituted saccharin.

3,711,385

ELECTRODE HAVING PLATINUM METAL OXIDE COATING THEREON, AND METHOD OF USE THEREOF

Henri Bernard Beer, Kalmthout, Belgium, assignor to Chemnor Corporation, Panama City, Panama

No Drawing. Continuation-in-part of application Ser. No. 549,194, May 11, 1966. This application Sept. 25, 1970, Ser. No. 75,726
Int. Cl. B01k *3/00*
U.S. Cl. 204—59 41 Claims

An electrode for use in an electrolytic process. The electrode has a core of a film-forming metal and a layer having at least the outside portion of the thickness thereof of an electrolyte resistant and electrolysis product resistant material, which outside portion has a thickness of at least about 0.054 micron. The layer is on at least part of the surface of said core. The material of the portion consists essentially of at least one oxide which is an oxide of at least one platinum metal taken from the group consisting of platinum, iridium, rhodium, palladium, ruthenium, and osmium. The electrode is especially useful in electrolysis of brine to obtain chlorine.

3,711,386

RECOVERY OF METALS BY ELECTRODEPOSITION

John M. Gomes; Danny L. Pool, and Morton Wong, all of Reno, Nev., assignors to The United States of America as represented by the Secretary of the Interior

Filed Dec. 4, 1969, Ser. No. 882,272
Int. Cl. C22d *3/18*
U.S. Cl. 204—64 R 6 Claims

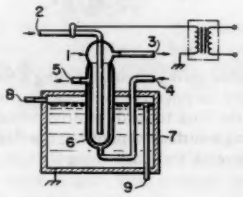
Metallic elements such as iron, manganese and refractory metals are recovered from ores, slags, silicate residues, etc., by electrodeposition from a melt comprising a chloride phase and a silicate phase. The cathode is submerged in the chloride phase while the anode is in contact with both the chloride and the silicate phases. Borate, phosphate or fluoride salts are added to the melt to promote diffusion of metallic ions from the silicate phase to the chloride phase.

3,711,387

METHOD FOR RADIATION GAS PHASE REACTIONS

Tomomichi Kasamatsu, Takasaki-shi, and Hiroshi Sakurai, Kohoku-ku, Yokohama-shi, both of Japan, assignors to Japan Atomic Energy Research Institute

Filed April 29, 1969, Ser. No. 820,075
Claims priority, application Japan, May 6, 1968, 43/30189
Int. Cl. B01j *1/10;* B01k *1/00*
U.S. Cl. 204—157.1 H 4 Claims



When a gas to be gas phase reacted is fed into a reaction zone maintained in the Geiger-Muller region and is irradiated with an ionizing radiation, the gas phase reaction of said gas is promoted because the avalanche of ions is repeated in the Geiger-Muller region by virtue of the irradiation.

3,711,388

OXIDATION STEP IN ELECTROLYSIS OF AQUEOUS HCl

Gerhard Gritzner, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 11, 1970, Ser. No. 97,325
Int. Cl. C01b *7/06*
U.S. Cl. 204—128 10 Claims

The current invention pertains to processes comprising electrolyzing hydrochloric acid in a diaphragm cell having an anolyte and a catholyte to produce chlorine. More particularly, it concerns adding a substantially non-foaming, water-soluble, ionic, organic compound to the catholyte, and dispersing an oxidizing gas therein to form small bubbles and oxidize the catholyte. The organic additive, which induces a smaller bubble size, effects a reduction in power consumed by the dispersing means and increases the oxidation rate of metal ions in the catholyte.

3,711,389

PROCESS FOR TREATING POLYMERIC SUBSTRATES WITH HIGH-ENERGY RADIATION

Edwin O. Hook, Marshfield, and Larry D. Nichols, Belmont, Mass., assignors to Moleculon Research Corporation, Cambridge, Mass.

No Drawing. Filed July 15, 1969, Ser. No. 841,981
Int. Cl. B01j *1/10, 1/12;* C07c *125/00*
U.S. Cl. 204—159.12 13 Claims

A new group of cyclotri- and cyclotetraphosphazene compounds bearing at least one polymerizable olefinic moiety and a method of enhancing physical properties such as flame resistance, solvent resistance, heat resistance or deformation resistance of a variety of substrates by treatment of the substrate with ionizing radiation and cyclotriphosphazene or cyclotetraphosphazene compounds bearing at least one radical having a polymerizable double bond between the terminal carbon atom and the penultimate carbon atom.

3,711,390

PHOTOPOLYMERIZABLE EPOXY SYSTEMS CONTAINING SUBSTITUTED CYCLIC AMIDES OR SUBSTITUTED UREAS AS GELATION INHIBITORS

Jacob Howard Feinberg, 1 Stanford Court, Hightstown, N.J. 08520

No Drawing. Filed May 18, 1971, Ser. No. 144,666
Int. Cl. B01j 1/10, 1/12
U.S. Cl. 204—159.11 29 Claims

Polymerization of epoxide monomers and prepolymers, and of other materials polymerizable through the action of cationic catalysts, is controlled by providing, in association with a radiation-sensitive catalyst precursor, a gelation inhibitor in the form of a substituted acyclic amide or a substituted urea, such as N,N-dimethylacetamide and 1,1,3,3-tetramethylurea.

3,711,391

PHOTOPOLYMERIZABLE EPOXY SYSTEMS CONTAINING SULFOXIDE GELATION INHIBITORS

Jacob Howard Feinberg, Hightstown, N.J., assignor to American Can Company, Greenwich, Conn.

No Drawing. Filed May 18, 1971, Ser. No. 144,665
Int. Cl. B01j 1/10, 1/12
U.S. Cl. 204—159.11 18 Claims

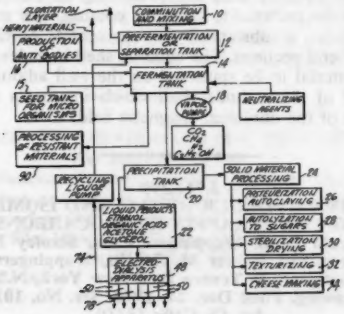
Polymerization of epoxide monomers and prepolymers, and of other materials polymerizable through the action of cationic catalysts, is controlled by providing, in association with a radiation-sensitive catalyst precursor, a gelation inhibitor in the form of a sulfoxide compound such as methyl sulfoxide or n-propyl sulfoxide.

3,711,392

METHOD FOR THE UTILIZATION OF ORGANIC WASTE MATERIAL

James B. Metzger, 20 Cleveland Lane, Princeton, N.J.

Filed Feb. 16, 1971, Ser. No. 115,545
Int. Cl. B01d 13/02
U.S. Cl. 204—180 P 37 Claims



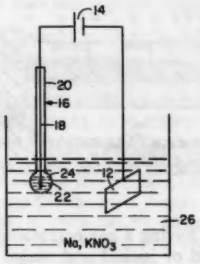
Biodegradable waste materials are utilized by forming a suspension in a fermentation tank of comminated waste materials mixed with a microbiological system of a plurality of selected types of microorganisms under conditions to decompose the waste materials. After sufficient microbial metabolic action has taken place, gaseous products and microbial-resistant portions of the suspension are removed. The solid proteineous materials are then separated from the liquor formed in the suspension and the components of the liquor are separated by electrodialysis.

3,711,393

PURIFICATION OF A MOLTEN SALT BATH

Harmon M. Garfinkel, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 15, 1969, Ser. No. 884,829
Int. Cl. B01d 13/02
U.S. Cl. 204—180 R 4 Claims



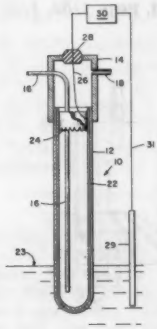
This invention relates to a method of purifying a molten salt bath containing a small amount of a monovalent ion as an impurity, and to an electrolytic system for use in carrying out the method. The invention finds particular application as an improvement in known methods of modifying a glass surface by exchanging sodium ions from the glass surface with potassium ions from a molten salt math, and is described with special reference to such specific application.

3,711,394

CONTINUOUS OXYGEN MONITORING OF LIQUID METALS

Bertram Minushkin, Smithtown; George Kissel, Bayport, and Francis J. Salzano, Patchogue, all of N.Y., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 29, 1970, Ser. No. 85,002
Int. Cl. G01n 27/46
U.S. Cl. 204—195 S 4 Claims

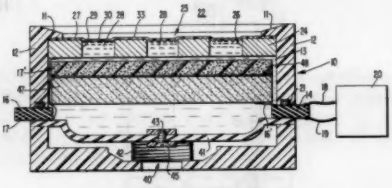


An electrode assembly for use in measuring the oxygen content of liquid sodium consisting of a solid body of electrolytic material for immersion in the sodium. The active electrode is oxygen or a gas containing oxygen circulated directly in contact with the inner coated surface of the body.

3,711,395
GALVANIC CELLS

Robert E. Plank, Willow Grove, and Michael D. Rutkowski, Phoenixville, Pa., assignors to Biomarine Industries, Inc., Devon, Pa.

Filed June 6, 1969, Ser. No. 831,152
Int. Cl. G01n 27/46
U.S. Cl. 204—195 P 3 Claims

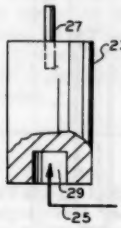


A galvanic cell having a gas permeable membrane mechanically adhered or locked and sealed to a perforated electrode and this membrane-electrode structure is secured along its periphery to form a relatively rigid closure for one end of a housing filled with an electrolyte. The non-electrode side of the membrane is exposed to a fluid substance containing a component electro-active with the electrode material on the walls defining the perforations in the electrode. A second electrode is contained within the reservoir and a portion of the reservoir is closed by a flexible diaphragm whereby the reservoir is made volumetrically variable so as to make the galvanic cell bends proof and prevent formation of voids due to loss of water vapor from the electrolyte through the permeable membrane. External connections to the electrodes are provided in the form of an insulated disc having planar electrical conductors thereon and which disc forms a portion of the walls of the cell. A process for making the membrane-electrode structure is also disclosed. Consult the specification for further features and details.

3,711,396
POROUS ELECTRODE HAVING OPEN FEED CAVITY

Benedict H. Ashe, Jr., and Homer M. Fox, Bartlesville, Okla., assignors to Phillips Petroleum Company

Original application June 24, 1968, Ser. No. 739,507. Divided and this application Sept. 4, 1970, Ser. No. 69,735
Int. Cl. B01r 3/04, 3/08
U.S. Cl. 204—284 17 Claims



In an electrochemical process, the reaction takes place within the confines of a porous electrode element. The bottom of this electrode element has a cavity open to the bulk of the electrolyte. The gaseous or vaporous feed materials are introduced into this cavity, and are converted during their upward passage through the electrode without contact with the bulk of the electrolyte.

3,711,397
ELECTRODE AND PROCESS FOR MAKING SAME

Aleksandrs Martinsons, Wadsworth, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

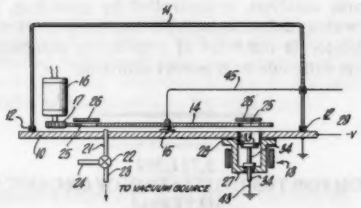
Continuation-in-part of Ser. No. 86,062, Nov. 2, 1970, abandoned. This application March 8, 1971, Ser. No. 121,683
Int. Cl. B01r 3/04
U.S. Cl. 204—290 F 9 Claims

Electrodes suitable for use for electrolytic purposes, for example for the electrolysis of aqueous alkali metal chloride solutions, are disclosed. The electrodes of this invention have an electroconductive substrate with an electro-conductive outer surface containing a spinel thereon, and an intermediate electroconductive layer between the electro-conductive spinel surface and the substrate which intermediate layer contains an oxycompound of a second transition series platinum group metal (ruthenium, rhodium, palladium).

3,711,398
SPUTTERING APPARATUS

Peter J. Clarke, 30 Erland Road, Stony Brook, N.Y. 10012

Filed Feb. 18, 1971, Ser. No. 116,387
Int. Cl. C23c 15/00
U.S. Cl. 204—298 3 Claims



Sputtering apparatus for coating a work piece which includes an open-ended cathode shell having a material to be sputtered, magnetic means surrounding the shell for producing a magnetic field and an anode disposed within the cathode shell for producing an electric field to sputter the material to form the coating. The magnetic field includes a substantially linear central portion and nonlinear end portions. The cathode shell includes a layer of the material to be sputtered on the wall adjoining the open end of the cathode shell which intercepts at least a portion of the nonlinear magnetic field.

3,711,399
SELECTIVE HYDROCRACKING AND ISOMERIZATION OF PARAFFIN HYDROCARBONS

John Harold Estes, Wappingers Falls, Stanley Kravitz, Wiccopee, and Robert M. Suggitt, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

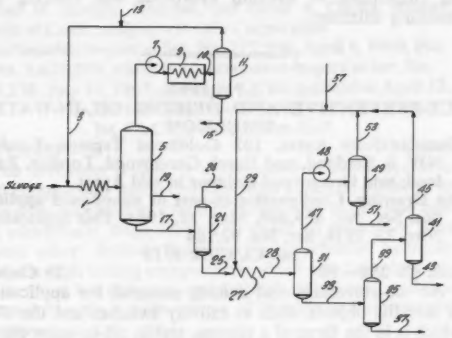
No Drawing. Filed Dec. 24, 1970, Ser. No. 101,445
Int. Cl. C10g 13/10
U.S. Cl. 208—112 16 Claims

Paraffin hydrocarbons are selectively hydrocracked and isomerized under controlled conversion conditions by contacting the hydrocarbon with hydrogen, a catalyst composed of a fluorided Group VII–B or VIII metal-alumina catalyst and a carbon oxide as a conversion reaction moderator. By employing a fluorided metal-alumina catalyst and a carbon oxide moderator such as carbon monoxide or carbon dioxide, paraffin hydrocarbons are selectively hydrocracked and isomerized in a manner such that selectivity, activity and product distribution is controlled over the course of the conversion reaction.

3,711,400
CONTINUOUS PROCESS FOR RECOVERING WAXES FROM OILY SLUDGES

Edward L. Cole, Fishkill, and Howard V. Hess, Glenham, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 6, 1970, Ser. No. 87,452
Int. Cl. B01d 21/10, 11/04
U.S. Cl. 210—21 16 Claims

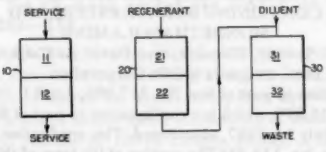


In the first stage of a continuous process oily sludges are mixed with light hydrocarbons differing substantially in specific gravity therefrom to separate the sludges into an oil-hydrocarbon phase and a water-waxy solids phase. The oil-hydrocarbon phase is heated to a temperature above the critical temperature of the light hydrocarbons to remove the light hydrocarbons which are then recycled for mixing with additional sludge and the oil is recovered for further use. The water-waxy solids phase is treated to obtain water of reduced Chemical Oxygen Demand which can be discharged in receiving bodies of water without polluting the same. The waxy solids-water slurry which remains is, in the second stage of the process of this invention, dried and the resulting dry waxy solids are treated with a light aromatic solvent, such as benezne, to yield a solution of wax and the aromatic solvent and wax-free solids. After the aromatic solvent wax solution is stripped to remove the aromatic solvent, a valuable wax product remains. In a final step, the wax-free solids are heated to remove the last traces of the aromatic solvent therefrom yielding dry, hydrocarbon-free, solids which are suitable for a wide variety of uses, such as, for example, for land fill.

3,711,401
REGENERATION METHOD FOR DUAL BEDS OF ION EXCHANGE RESINS

Robert S. Hamilton, Princeton Junction; Albert W. Kingsbury, Moorestown, and John R. Anderson, Cranbury, all of N.J., assignors to Sybron Corporation, Rochester, N.Y.

Filed March 8, 1971, Ser. No. 121,798
Int. Cl. B01d 15/06
U.S. Cl. 210—34 6 Claims



Ion exchange columns containing a layer of weak resin and a layer of strong resin are regenerated by passing partially spent regenerant through the column to regenerate the weak resin and then passing fresh regenerant through the column to regenerate the strong resin. Efficient regeneration is achieved in a downflow regeneration process and silica and calcium sulphate precipitation problems are reduced. In some cases, it is desirable to soak the strong resin in regenerant after the weak regenerant as been passed through the column in order to improve separation of the resins, shorten the total regeneration time and remove additional silica ions. The processes are preferably practiced on systems of three or more columns in which the columns are sequentially exhausted and regenerated, with at least two columns being regenerated in series.

3,711,402
PROCESS FOR THE TREATMENT OF PHENOLATED INDUSTRIAL EFFLUENT

Jean-Pierre Zumbrunn, 95 Saint Gratien, and Francois Crommelynck, 69 Lyon, both of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed May 8, 1972, Ser. No. 251,102
Claims priority, application France, May 13, 1971, 7117293
Int. Cl. C02c 5/04
U.S. Cl. 210—63 18 Claims

The present invention relates to a process for the complete purification of industrial effluent polluted by phenolated impurities wherein the degradation of the polluant is obtained by the action of an oxidizing reagent containing the HSO_5^- anion. The oxidizing reagent is a member of the group constituted by monopersulphuric acid and its salts. The oxidizing reagent is an aqueous solution containing HSO_5^- anion and containing furthermore NH_4^+, HSO_4^- ions and, optionally, alkaline cations. The oxidizing reagent is an aqueous solution containing the HSO_5^- anion and containing furthermore hydrogen peroxide and H^+, HSO_4^- and SO_4^- ions.

3,711,403
CORROSION INHIBITORS EMPLOYING PHOSPHATE ESTERS OF CYCLIC AMIDINES

Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.

No Drawing. Original application Sept. 11, 1967, Ser. No. 666,953. Divided and this application Jan. 18, 1971, Ser. No. 107,450
Int. Cl. C07d 49/34; C23f 11/16
U.S. Cl. 252—8.55 E 5 Claims

Esters of cyclic amidines and phosphoric acids, including oxygen, sulfur and oxygen and sulfur-containing phosphoric acids, as illustrated by esters of the formula

$$\text{Ⓐ}_n\left[-\text{X}-\overset{\text{X}}{\overset{\|}{\text{P}}}-(\text{XR}')_{3-n}\right]_m$$

where Ⓐ is a cyclic amidine-containing radical, for example imidazoline and tetrahydropyrimidine, X is oxygen and/or sulfur; R' (which may be the same or different) is hydrogen or an alcohol moiety; n is 1–3, and m is a number determined by the number of hydroxy groups on the cyclic amidine. These compounds, among other uses, are employed as corrosion inhibitors.

3,711,404
USE OF PHOSPHORAMIDATES OF CYCLIC AMIDINES AS CORROSION INHIBITORS

Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.

No Drawing. Original application Sept. 5, 1967, Ser. No. 665,288. Divided and this application Feb. 2, 1971, Ser. No. 112,058
Int. Cl. C07d 49/34; C23f 11/16
U.S. Cl. 252—8.55 E 5 Claims

Amides of cyclic amidines and phosphoric acids including both oxygen, sulfur, and oxygen-sulfur-containing phosphoric acids, as illustrated by amides of the formula

$$\left[\text{Ⓐ}\left[-\text{A}-\overset{\text{H}}{\text{N}}-\right]_p\right]_n\overset{\text{X}}{\overset{\|}{\text{P}}}(\text{XR}')_{3-n}$$

where Ⓐ is a cyclic amidine-containing radical, for example imidazoline and tetrahydropyridine, X is oxygen and/or sulfur; R′ is hydrogen or an alcohol moiety; A is alkylene, *n* is 1–3 and *p* is 0–10. These compounds, among other uses are employed as corrosion inhibitors.

3,711,405

LOW FLUID LOSS WELL TREATING COMPOSITION AND METHOD

David S. Pye, Brea, Paul W. Fischer, Whittier, and Julius P. Gallus, Anaheim, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,254

Int. Cl. C10m *3/08*; E21b *43/25*

U.S. Cl. 252—8.55 R **8 Claims**

A low loss well treating composition comprising a dispersion of solid wax or wax-polymer particles in an aqueous liquid containing a hydrophilic agent consisting of water-soluble surface active agents or water-dispersible surface active agents, and a lipophilic agent consisting of oil-soluble surface active agents, oil-dispersible surface active agents and oleaginous liquids; and a process employing this composition in well drilling and treating.

3,711,406

LUBRICATING OIL CONTAINING AN HYDROXYLATED AMINE AND AN OVERBASED SULFONATE OR PHENATE

Warren Lowe, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed June 11, 1970, Ser. No. 45,567

Int. Cl. C10m *1/20, 1/32, 1/40*

U.S. Cl. 252—33.4 **8 Claims**

Poly(hydroxyalkylated) amines are combined with alkaline earth metal carbonates dispersed in a hydrocarbon medium to provide improved rust protection in internal combustion engines.

3,711,407

INCORPORATING LITHIUM SALICYLATE OR THE LIKE INTO A GREASE

Richard J. Plumstead, Mississauga, Ontario, Canada, assignor to Esso Research and Engineering Company, Linden, N.J.

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,878

Int. Cl. C10m *5/14*

U.S. Cl. 252—41 **6 Claims**

An alkali metal salt and particularly a lithium salt of salicylic acid or related hydroxy benzoic acid is incorporated into a lubricating oil or grease as an antioxidant by saponifying an aliphatic alcohol ester of the hydroxy benzoic acid and then removing the water and alcohol formed in the reaction. Improvements over prior art methods include better particle size distribution and lower cost.

3,711,408

SULFONAMIDES OF HIGH MOLECULAR WEIGHT ALKYL-SUBSTITUTED BENZENE SULFONIC ACIDS AND THEIR PREPARATION

Robert E. Karll, Munster, Ind., and Richard J. Lee, Park Forest, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Apr. 1, 1970, Ser. No. 24,806

Int. Cl. C10m *1/36, 1/38*

U.S. Cl. 252—47.5 **7 Claims**

Polymethylene-containing sulfonamides of alkyl substituted benzene sulfonic acids whose alkyl-substituent has a molecular weight in the range of 400 to 2800 are oil soluble, impart thermally stable dispersancy to oil solutions of the sulfonamides. The sulfonamides are preferably of polymethylene-containing diprimary amines such as polyazalkylene diamine, polymethylene diamine, polyethylene imines of 1000–40,000 molecular weight and di(aminopolymethylene) piperazine. The sulfonamides are conveniently prepared as solutes in light mineral oil (white oil to SAE 10 type hydrocarbon oil) by reaction of suitable alkylbenzene sulfonic acid chloride and the polymethylene-containing diprimary amine in the presence of pyridine and C_5–C_8 alkane, removing the alkane and pyridine, treating the residue with a light mineral oil suspension of calcium hydroxide and filtering the resulting mixture.

3,711,409

ICE-PREVENTIVE AND DEICING OIL-IN-WATER EMULSION

Douglas John Ayres, 102 Goldhurst Terrace, London NW. 6, England, and Derek Greenwood, London, England; said Greenwood assignor to said Ayres

No Drawing. Continuation-in-part of abandoned application Ser. No. 439,469, Mar. 12, 1965. This application Nov. 23, 1970, Ser. No. 92,184

Int. Cl. C09k *3/18*

U.S. Cl. 252—70 **29 Claims**

An ice-preventive and deicing material for application to metallic objects, such as railway switches and the like, which is in the form of a viscous, stable, oil-in-water emulsion, comprising, about 5% to 30% of the lubricant oil or grease, which is substantially insoluble in water, as the disperse phase; about 2 to 20% of a cationic or non-ionic surface active agent as an emulsifying agent; and the balance an aqueous solution, as the continuous phase, containing about 2 to 5% of the total composition of a water-absorbing, viscosity-maintaining compound and a sufficient amount of a freezing point depressant for water to lower the freezing point of the water with which the composition comes into contact and thereby prevent the formation of ice on the protected object or remove ice from the protected object, provide lubrication of parts where required and prevent adhesion of parts as needed.

3,711,410

LOW WATER-SENSITIVE HYDRAULIC FLUIDS CONTAINING BORATE ESTERS

Arthur W. Sawyer, Hamden, and David A. Csejka, Orange, both of Conn., assignors to Olin Corporation

Continuation-in-part of Ser. No. 717,996, April 1, 1968, Pat. No. 3,625,899, which is a continuation-in-part of Ser. No. 653,338, July 14, 1967, abandoned. This application April 12, 1971, Ser. No. 133,452

Int. Cl. C09k *3/00*; C10m *3/48*

U.S. Cl. 252—78 **25 Claims**

A low water-sensitive hydraulic fluid composition which contains from about 20 to about 96 percent by weight of at least one borate ester as the base fluid. Such low-water sensitive hydraulic fluids are high boiling compositions particularly useful as brake fluids.

3,711,411

LOW WATER-SENSITIVE HYDRAULIC FLUIDS CONTAINING BORATE ESTERS AND MONOETHANOLAMINE

Arthur W. Sawyer, Hamden, and David A. Csejka, Orange, both of Conn., assignors to Olin Corporation

Continuation-in-part of Ser. No. 717,996, April 1, 1968, Pat. No. 3,625,899, which is a continuation-in-part of Ser. No. 653,338, July 14, 1967, abandoned. This application April 15, 1971, Ser. No. 134,456The portion of the term of this patent subsequent to Dec. 7, 1988, has been disclaimed.

Int. Cl. C09k *3/00*; C10m *3/48*; C23f *11/14*

U.S. Cl. 252—78 **10 Claims**

Low water-sensitive hydraulic fluid compositions which contain at least one borate ester as the base fluid and from

about 0.1 to about 8 percent by weight of monoethanolamine as an alkaline buffering agent. Such low water-sensitive hydraulic fluids are high boiling and have a low rate of corrosivity.

3,711,412

LOW-WATER SENSITIVE HYDRAULIC FLUIDS CONTAINING BORATE ESTERS AND FORMALS

Arthur W. Sawyer, Hamden, and David A. Csejka, Orange, both of Conn., assignors to Olin Corporation

Continuation-in-part of Ser. No. 717,996, April 1, 1968, Pat. No. 3,625,899, which is a continuation-in-part of Ser. No. 653,338, July 14, 1967, abandoned. This application April 12, 1971, Ser. No. 133,407

Int. Cl. C09k *3/00;* **C10m** *3/48*

U.S. Cl. 252—78 **32 Claims**

This invention relates to a low water-sensitive hydraulic fluid composition which contains from about 20 to about 96 percent by weight of at least one borate ester as the base fluid and additionally, from about 2 to about 40 percent of a bis (glycol ether) formal. Such low water-sensitive hydraulic fluids are high boiling compositions which also have desirable properties at low temperatures, particularly viscosity, and thus are useful under a wide variety of climatic and operational conditions.

3,711,413

NOVEL BLEACHING COMPOUNDS

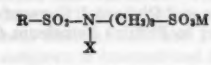
Peter Robson, Northumberland, and Frederick Edward Hardy, Newcastle-upon-Tyne, England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Original application Oct. 9, 1968, Ser. No. 766,326. Divided and this application Mar. 10, 1972, Ser. No. 233,791

Int. Cl. C11d *7/56*

U.S. Cl. 252—99 **9 Claims**

N-halogenated compounds having the general formula



wherein R is an alkyl, aryl or substituted aryl group, X is bromine or chlorine, and M is an alkali metal, are useful as bleaching agents and as disinfectants.

3,711,414

HIGH FOAMING ANTISTATIC DETERGENT COMPOSITION

Gordon Trent Hewitt, Upper Montclair, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 454,173, May 7, 1965. This application Dec. 16, 1969, Ser. No. 882,396

Int. Cl. A61k *7/08;* **C11d** *1/65, 3/44*

U.S. Cl. 252—118 **7 Claims**

A clear, homogeneous, liquid detergent composition having an anti-static conditioning effect on hair, wool and other fibers is described which comprises by weight 5 to 25% of a trialkyl amine oxide containing at least one long chain alkyl radical of 10–18 carbon atoms, 5 to 25% of an anionic surface active agent, ½ to 10% of a quaternary ammonium salt having at least one long chain hydrophobic radical of 10 to 20 carbon atoms in its molecular structure and 50 to 90% of inert solvent and water. Preferred compositions contain soap as the anionic surface active agent.

3,711,415

CHEMILUMINESCENT REACTION OF SUBSTITUTED VINYLENE CARBONATES WITH HYDROGEN PEROXIDE IN THE PRESENCE OF A FLUORESCER

Donald Roy Maulding, Branchburg Township, Somerset County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Jan. 27, 1971, Ser. No. 110,297

Int. Cl. C01k *3/00*

U.S. Cl. 252—188.3 **8 Claims**

Novel compositions of matter and reactions for the direct generation of light from chemical energy employing such compositions. By "light" is meant electromagnetic radiation at wavelengths falling between about 350 mμ and 1000 mμ.

3,711,416

COMPOSITIONS CONTAINING AQUEOUS ANIONIC SILICA SOL AND NONGELLING FLOCCULATING AGENT

Charles C. Payne, Chicago, and Peter H. Vossos, Lisle, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Feb. 1, 1971, Ser. No. 111,627

Int. Cl. B01j *13/00*

U.S. Cl. 252—313 S **2 Claims**

Compositions especially useful for coatings are prepared by mixing an aqueous colloidal anionic silica sol with a nongelling flocculating agent, viz, a water-dispersible synthetic polymer having a linear hydrocarbon structure containing in a side chain a quaternary imidazole group.

3,711,417

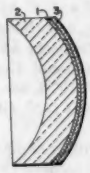
MULTILAYER LIGHT POLARIZING LENS

Norman W. Schuler, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 75, Jan. 2, 1970. This application July 1, 1970, Ser. No. 51,522

Int. Cl. F21v *9/00*

U.S. Cl. 252—300 **15 Claims**



Synthetic plastic light-polarizing ophthalmic lenses comprising an acrylic polymer.

3,711,418

RARE EARTH OXIDE PHOSPHORS

James E. Mathers and Ramon L. Yale, Ulster, Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

No Drawing. Filed Nov. 13, 1970, Ser. No. 89,452

Int. Cl. C09k *1/10*

U.S. Cl. 252—301.4 R **6 Claims**

A cathodoluminescent phosphor composition, with a controlled decay time, is disclosed wherein the phosphor consists of a matrix of Y_2O_3 and a dopant of europium and a predetermined amount of dysprosium. A process for controlling the decay time is also disclosed.

3,711,419

PROCESS FOR PREPARING SILICA AQUASOLS

Ralph Marotta, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed July 2, 1970, Ser. No. 52,132
Int. Cl. B01j *13/00*; C01b *33/14*
U.S. Cl. 252—313 S 5 Claims

A process for preparing stable, essentially transparent alkaline silica aquasols having an average particle diameter of 5 to 10 millimicrons by adding an acidic silica sol to a dilute alkali metal silicate solution. The acidic silica sol is gradually added over a period of 4 to 8 hours such that not more than 25 weight percent of the acidic sol is added during any one hour period. At least 25 weight percent of the acidic sol is added while the temperature is maintained within a range of about 25° C. to about 50° C., at least about 7 weight percent to about 30 weight percent is added while the temperature is maintained within a range of about 50° C. to about 90° C. and the balance is added while the temperature is maintained within a range of about 70° C. to about 100° C. The last step is that of concentrating by evaporation of water.

3,711,420

RUST PREVENTATIVE COMPOSITIONS CONTAINING A WAX, METAL NAPHTHENATE, AND A NATURAL FATTY BODY-POLYOL ESTER

Ernest Frank Jones, Newbury, England, assignor to Esso Research and Engineering Company, Linden, N.J.

No Drawing. Filed Nov. 23, 1970, Ser. No. 91,880
Claims priority, application Great Britain, Feb. 12, 1970, 6,827/70
Int. Cl. C23f *11/12*
U.S. Cl. 252—389 7 Claims

A rust preventive composition suitable for the protection of stressing tendons used in the concrete shield of atomic power stations. This consists of a mixture of a wax (e.g. petrolatum), a metal naphthenate (e.g. that of a metal of Group IV of the Periodic System such as lead), and an ester derived from a polyol (e.g. a polyhydric alcohol having no more than 8 carbon atoms per molecule such as pentaerythritol) and a natural fatty body (e.g. lanolin).

3,711,421

LIQUID SCINTILLATION MIXTURES CONTAINING PERDEUTERIZED SOLVENT AND/OR SOLUBILITY INCREASING AGENT

Peter Krumbiegel, Leipzig, and Heinz Schmidt, Berlin, both of Germany, assignors to Deutsche Akademie Der Wissenschaften Zu Berlin, Berlin-Adlershof, Germany

Filed July 17, 1970, Ser. No. 55,992
Int. Cl. G01t *1/20*; G09k *1/02*
U.S. Cl. 252—408 10 Claims

Liquid scintillation mixtures comprising at least one scintillatable organic material in toluene or a solvent structurally related to toluene such as α-methylnaphthaline, ditolylmethane and xylene and which can contain as a solubility increasing agent a quaternary ammonium base, alcohol and/or water wherein at least one of the solvent and/or solubility increasing agent is in a perdeuterized form, and wherein said solvent is used in a form where it is at least 97 atom percent perdeuterized and said solubility increasing agent is used in a form wherein the OH groups thereof are at least 97 atom percent perdeuterized.

3,711,422

CRACKING CATALYST RESTORATION WITH ANTIMONY COMPOUNDS

Marvin M. Johnson and Donald C. Tabler, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Filed Sept. 8, 1970, Ser. No. 70,476
Int. Cl. B01j *11/70, 11/72*
U.S. Cl. 252—414 10 Claims

A method of restoring activity to cracking catalysts which have been contaminated with metals which involves passivating the metals by contacting them with antimony-containing compounds and restoring the catalyst activity thereafter by conventional calcination techniques.

3,711,423

HYDROGENATION OF ORGANIC COMPOUNDS

Joseph K. Mertzweiller and Horace M. Tenney, Baton Rouge, La., assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 674,098, Oct. 10, 1967. This application Nov. 28, 1969, Ser. No. 880,933
The portion of the term of the patent subsequent to July 18, 1989, has been disclaimed
Int. Cl. C07g *5/02*
U.S. Cl. 252—431 21 Claims

Novel hydrogenation catalysts are formed by impregnating a suitable support material with an aqueous solution of a salt of a transition metal; heat-treating the impregnated support at a temperature above 500° F. to form chemical complexes on the surface of the support and to drive off moisture and absorbed oxygen; activating the surface complex by contacting the impregnated support with a soluble organometallic compound wherein the metal constituent is selected from Groups I, II and III of the Periodic Chart of the Elements, and thereafter treating the activated support material in the presence of a gaseous stream containing hydrogen at a temperature of at least 300° F. to form a highly stable heterogeneous catalyst. The novel supported catalysts of the instant invention have been found to be highly active for the hydrogenation of organic compounds under extremely mild conditions.

3,711,424

ORGANOLITHIUM POLYMERIZATION INITIATORS

William J. Trepka and Richard J. Sonnenfeld, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Continuation of abandoned application Ser. No. 772,865, Nov. 1, 1968. This application Feb. 24, 1971, Ser. No. 118,575
Int. Cl. C08f *7/02, 3/16*
U.S. Cl. 252—431 R 8 Claims

Improved 4-halophenyllithium polymerization initiators are prepared by milling 4-halophenyllithium as a highly dispersed form in a hydrocarbon dispersing medium.

3,711,425

FLUORIDED METAL ALUMINA CATALYSTS

Robert M. Suggitt and John H. Estes, Wappingers Falls, and Stanley Kravitz, Wiccopee, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed June 25, 1970, Ser. No. 60,954
Int. Cl. B01j *11/74, 11/78*
U.S. Cl. 252—439 11 Claims

A method for preparing a hydrocarbon conversion catalyst by providing a composite composed of alumina having associated therewith a Group VI–B or VIII metal or compound and contacting the composite with an activator system comprising oxygen and an organic fluoride compound having from 2 to 16 carbon atoms. The catalyst so prepared is useful in hydrocarbon conversion processes as isomerization, hydrocracking, reforming, dehydrogenation, disproportionation and polymerization.

3,711,426

PROCESS FOR PREPARING A CHROMIUM-PROMOTED IRON OXIDE CATALYST

Mogens Holger Jorgensen, Virum, Denmark, assignor to Haldor Frederik Axel Topsoe, Frydenlundsvej, Vedbaek, Denmark

No Drawing. Filed Feb. 26, 1970, Ser. No. 14,674

Int. Cl. B01j *11/22, 11/74*

U.S. Cl. 252—440 6 Claims

High temperature shift catalysts comprising iron oxide are prepared from solutions of soluble iron salts by precipitation with an organic acid reagent, such as oxalic acid, giving precipitates in a very coarse, easily-washed form.

Treatment of the well-washed precipitate with alkali regenerates the organic acid reagent and gives a highly flocculent iron oxide of high specific surface and extremely low sulphur content. This is particularly suitable for promotion with PbO, which is noted as being very sensitive to sulphur contamination.

3,711,427

CATALYTIC BED COATED WITH METAL FOR GAS GENERATOR

James A. Murfree, Jr., and William A. Duncan, Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Oct. 1, 1969, Ser. No. 863,758

Int. Cl. B01j *11/40*

U.S. Cl. 252—455 R 3 Claims

An inert porous material with decomposed products from a manganese carbonyl compound deposited thereon to form a catalytic bed for liquid gas generators that utilize hydrazine type fuels.

3,711,428

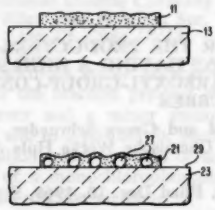
ELECTRICAL RESISTOR PASTE CONTAINING A SMALL AMOUNT OF CHARCOAL

Thomas W. Aycock, Chelsea, and John J. Wright, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,295

Int. Cl. H01b *1/06, 3/08, 1/02, 1/04*

U.S. Cl. 252—502 7 Claims



A resistor paste composition contains a small amount of powdered activated charcoal. The composition is applied to a ceramic substrate by screen printing, fired at an elevated temperature, and cooled to room temperature to form an electrical resistor element.

ERRATUM

For Class 252—518 see:
Patent No. 3,711,328

ERRATUM

For Class 260—609 R see:
Patent No. 3,710,439

3,711,429

ARSONIUM AND STIBONIUM ANION EXCHANGERS

Takuji Ito, Setagaya-ku, Tokyo, and Yoshio Hoshino, Fuchushi, Tokyo, both of Japan, assignors to Tokyo Institute of Technology, Tokyo, Japan

Filed March 22, 1971, Ser. No. 126,945

Claims priority, application Japan, March 27, 1970, 45/26383

Int. Cl. C08f *19/20*

U.S. Cl. 260—2.1 E 3 Claims

Anion exchangers characterized by superior and unique properties are provided which are polystyrene-divinylbenzene copolymers having an exchange group in the molecule, the exchange group being an "$-CH_2X^+R$" group (wherein X is an As or Sb atom, and R is a methyl group).

3,711,430

EXPANDABLE COPOLYMERS OF α-OLEFINS AND α,β - MONOETHYLENICALLY UNSATURATED CARBOXYLIC ACIDS

Louis C. Rubens, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation of abandoned application Ser. No. 731,746, May 24, 1968. This application Feb. 1, 1971, Ser. No. 111,663

Int. Cl. C08f *37/00, 47/10*

U.S. Cl. 260—2.5 B 9 Claims

New formable thermoplastic materials comprising α-olefins and α,β-monoethylenically unsaturated acids having integrated therewith certain organic blowing agents and/or ammonia. When these thermoplastic materials are in particle form they can be used to mold articles using dielectric heat to cellulate the material.

3,711,431

METHOD OF MANUFACTURING LIGHTWEIGHT BUILDING COMPONENTS

Silvio Vargiu, Osvaldo Spelta, Sesto S. Giovanni, and Pierluigi Abruzzi, Bergamo, Italy, assignors to Societá Italiana Resine S.p.A., Milan, Italy

No Drawing. Filed Dec. 22, 1971, Ser. No. 211,057

Claims priority, application Italy, Dec. 23, 1970, 33,464/70

Int. Cl. C08v *1/30*

U.S. Cl. 260—2.5 B 10 Claims

Lightweight building elements are made from cement, water and vinyl resin latex homogenised with granular expanded polystyrene pretreated with an aqueous dispersion of an epoxy glue and organic solvent and a hardener.

3,711,432

LOW SHRINK POLYESTER RESIN SYSTEMS FORMED OF A MIXTURE OF UNSATURATED POLYESTER RESIN, MONOMERIC COPOLYMERIZABLE COMPONENT AND CELLULOSE ORGANIC ESTER

Navin Shah, Edison, N.J., assignor to W. R. Grace & Co., New York, N.Y.

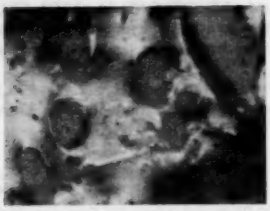
Filed March 2, 1971, Ser. No. 120,229

Int. Cl. C08b *21/08*

U.S. Cl. 260—16 12 Claims

The invention disclosed is for a method of preparing a new low shrink, one component polyester resin system which may be used in either bulk or sheet molding compounds. It may also be used in liquid form, at ambient or elevated temperatures, in casting or molding techniques of the polyester resin art. The one component polyester resin system consists of a mixture of unsaturated polyester resin, monomeric

copolymerizable component and cellulose organic ester. Optional materials such as fillers, glass fibers, pigments, release



agents, catalysts and the like may be added, according to the specific fabrication technique to be employed, to provide a system which displays little or no shrinkage during curing.

3,711,433

COATING COMPOSITION OF AN ACRYLIC OXAZOLINE CONTAINING POLYMER AND CELLULOSE ACETATE BUTYRATE

Monroe M. Willey, Flushing, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation of abandoned application Ser. No. 754,958, Aug. 23, 1968. This application Feb. 19, 1971, Ser. No. 117,108

Int. Cl. C08f *31/00, 45/26;* C09d *3/80*
U.S. Cl. 260—17 R **6 Claims**

A coating composition in which the film-forming material consists essentially of

(a) an acrylic oxazoline containing polymer which concontains methacrylate, an alkyl ester of acrylic or methacrylic acid that has 2–12 carbon atoms in the alkyl group, acrylonitrile, and oxazoline containing compound,
(b) cellulose acetate butyrate, and
(c) an organic plasticizer.

3,711,434

LIQUID COATING COMPOSITION COMPRISING AMINO RESIN AND VINYL-MODIFIED ALKYD RESIN

Tadashi Watanabe, Koichiro Murata, Naozumi Iwasawa, and Tsuyoshi Okinaga, Hiratsuka, Japan, assignors to Kansai Paint Company, Limited, Hyogo-ken, Japan

No Drawing. Filed Feb. 17, 1971, Ser. No. 116,220

Claims priority, application Japan, Feb. 23, 1970, 45/14,813

Int. Cl. C09d *3/66, 3/52*
U.S. Cl. 260—21 **12 Claims**

A liquid coating composition comprising:

(A) 5 to 40 parts by weight of amino resins,
(B) 95 to 60 parts by weight of vinyl-modified alkyd resins, and
(C) an organic solvent or a mixture of the organic solvent and water,

wherein said vinyl-modified alkyd resins are obtained by graft-polymerizing a vinyl monomer or a mixture of vinyl monomers onto alkyd resins after said alkyd resins are obtained by reacting polyalcohol with carboxylic acids, said alkyd resins, containing 5 to 60% by weight of hexahydrophthalic acid and/or its anhydride.

3,711,435

STABLE AQUEOUS DISPERSIONS OF ETHYLENE AMINOALKYL ACRYLATE COPOLYMERS

Clarence Frederick Hammer, Wilmington, and Philip Joseph Keller, Claymont, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 29, 1971, Ser. No. 111,108

Int. Cl. C08f *37/00*
U.S. Cl. 260—29.6 HN **14 Claims**

Stable, aqueous, cationic polyelectrolyte dispersions are provided in which copolymers of ethylene and selected aminoalkyl acrylates and methacrylates are self-dispersed in water with acids having a dissociation constant greater than 10^{-5}. Such dispersions are prepared by stirring water, a copolymer and an acid in a vessel, preferably at a temperature above the melting point of the copolymer when the copolymer is of high molecular weight and ethylene content. While there are a number of uses for such dispersions, particularly preferred uses are: (1) cured, ultra-thin coatings on metallic substrates, particularly aluminum, (2) as acid dyeable coatings on cellulosic substrates such as paper, and (3) as flocculating agents for removing suspended matter from water.

3,711,436

FLOOR POLISH COMPOSITION HAVING IMPROVED INITIAL WATER AND DETERGENT RESISTANCE

Connie J. Oliver, and Edward Hinsdale, both of Pittsburgh, Pa., assignors to Sinclair-Koppers Company, Pittsburgh, Pa.

Filed March 2, 1971, Ser. No. 120,321

Int. Cl. C08f *45/52, 45/24*
U.S. Cl. 260—28.5 R **7 Claims**

An improved aqueous polymer-emulsion floor polish composition containing an aqueous mixture of a wax, an alkali soluble resin, a polymer emulsion, and both a calcium compound dissociable in the composition to form Ca^{+2} ions and a zinc compound dissociable in the composition to form Zn^{+2} ions. These compositions exhibit initial water resistance when applied to a floor as a coating and dried.

3,711,437

PROCESS FOR THE PRODUCTION OF AQUEOUS DISPERSIONS HAVING A HIGH SURFACE TENSION OF CARBOXYL-GROUP-CONTAINING SYNTHETIC RUBBER

Alfred Wieland and Georg Schroeder, Marl, Germany, assignors to Chemische Werke Huls A.G., Marl, Germany

No Drawing. Filed Dec. 10, 1969, Ser. No. 884,049

Claims priority, application Germany, Dec. 12, 1968, P 18 14 209.1

Int. Cl. C08d *7/10, 9/02*
U.S. Cl. 260—29.7 W **13 Claims**

High surface tension aqueous dispersions of synthetic rubber containing carboxyl groups are prepared by polymerizing a monomeric mixture of a diolefin, a vinyl compound and a monoethylenically unsaturated carboxylic acid in the aqueous phase in the presence of 0.025–0.1% of a sulfonate emulsifier, 0.5–3.0% of a polyethylene glycol of a molecular weight of 300–3,000 and 10^{-2} to 10^{-5}% of iron ions, by weight calculated on the mixture of monomers.

3,711,438
METHOD OF MANUFACTURING THERMOPLASTIC RESIN MOLDINGS

Rinnosuke Susuki, Tokyo, Hiroshi Hoshi, Narashino, Jiro Saito, Tokyo, Kelichi Murakami, Sendai, and Michio Hirakawa, Ichikawa, Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

No Drawing. Filed Apr. 19, 1971, Ser. No. 135,496
Claims priority, application Japan, Apr. 25, 1970, 45/35,746; Apr. 27, 1970, 45/35,416
Int. Cl. C08f *45/04, 45/06*
U.S. Cl. 260—41 R 2 Claims

A method of manufacturing thermoplastic resin moldings comprising the steps of: preparing a mixture consisting of thermoplastic resin, calcium sulfite and conventional inorganic filler; and molding said mixture.

3,711,439
STABILIZED POLYURETHANE COMPOSITIONS

Frederic Christian Loew, Ridgewood, N.J., assignor to Inmont Corporation, New York, N.Y.

No Drawing. Filed Nov. 27, 1970, Ser. No. 93,410
Int. Cl. C08g *51/60*
U.S. Cl. 260—45.8 N 4 Claims

Improving the hydrolytic stability of thermoplastic elastomer polyurethanes containing polycarbodiimide as hydrolysis stabilizer, by adding certain minor proportions of N-(trichloromethylthio) phthalimide.

3,711,440
POLYURETHANES PREPARED FROM POLYESTER ORGANIC DIISOCYANATES AND BIS-(β - HYDROXYETHOXY-PHENYL) METHANE

David H. Chadwick, New Martinsville, W. Va., assignor to Mobay Chemical Company, Pittsburgh, Pa.

No Drawing. Filed Feb. 24, 1971, Ser. No. 118,504
Int. Cl. C08g *22/10*
U.S. Cl. 260—47 CB 5 Claims

Elastomeric polyurethane polymers are prepared by reacting a polyisocyanate with an organic compound having active hydrogen atoms which are reactive with —NCO groups and bis-(β-hydroxyethoxyphenyl)methane as a chain-extender. The elastomers have good physical properties and improved resistance to hydrolysis.

3,711,441
THERMAL OXIDATIVELY STABLE POLYCARBONATE COMPOSITION

Frank N. Liberti, Mount Vernon, Ind., assignor to General Electric Company

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,210
Int. Cl. C08g *17/13*
U.S. Cl. 260—47 XA 4 Claims

A thermal oxidatively stable polycarbonate composition consisting of the reaction product of biphenol-A, a carbonate precursor and a minor amount of a monochlorophosphine and to a process for preparing the stable polymer composition which consists of adding 0.0005 to about 0.1 mole of a monochlorophosphine per mole of bisphenol-A to the reaction medium.

3,711,442
POLYMERS WITH SILYLUREA UNITS WHICH CAN BE CONVERTED INTO POLYUREA ELASTOMERS

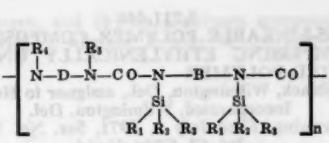
Marcel Lefort, Caluire, and Jean Robin, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed May 28, 1970, Ser. No. 41,624
Claims priority, application France, May 29, 1969, 6917558
Int. Cl. C08g *22/02, 22/16*
U.S. Cl. 260—75 NH 13 Claims

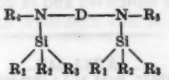
Polysilylureas having repeat units of general formula:

$$[O-A-O-CO-NH-B-NH-CO]_m,$$

and



wherein n and m are 20–400, A, B and D are divalent aliphatic or aromatic radicals, R_1, R_2 and R_3 are alkyl and R_4 and R_5 are alkyl or together are alkylene; are prepared by reacting $A(OH)_2$ with an excess of OCN—B—NCO to give a prepolymer which is reacted under anhydrous conditions with an N,N'-bis-triorganosilyl diamine



The polysilylureas are soluble in organic solvents and are formed into films or filaments and hydrolysed to corresponding polyureas.

3,711,443
LINEAR SEGMENTED POLYURETHANE ELASTOMERS

Wilhelm Thoma, Bergisch-Neukirchen, Harald Oertel, Odenthal-Gloebusch, and Heinrich Rinke, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 7, 1971, Ser. No. 132,159
Claims priority, application Germany, Apr. 13, 1970, P 20 17 510.4
Int. Cl. C08g *22/16, 51/44, 51/46*
U.S. Cl. 260—75 NH 4 Claims

Linear segmented polyurethane elastomers obtained by reaction of NCO-prepolymers with chain extending agents in polar organic solvents, at least 55 mol percent of said chain extending agents being a compound of the formula

$$NH_2—NH—CO—R—NH—CO—NH—R'$$
$$—NH—CO—NH—R—CO—NH—NH_2$$

3,711,444
POLYOL SOLUTIONS OF XANTHATES AS CATALYSTS IN MAKING POLYISOCYANURATES

Michael George Allen, Hudson, Wis., and George Van Dyke Tiers, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Nov. 9, 1970, Ser. No. 88,219
Int. Cl. C08g *22/40;* C09k *3/00*
U.S. Cl. 260—77.5 NC 14 Claims

Polyisocyanates are polytrimerized with novel xanthate salts, such as mono-sodium polypropylene ether glycol xanthate, to produce polyisocyanurates.

3,711,445
SELF-PRIMING POLYURETHANE COMPOSITIONS

Edward Chu, Philadelphia, and Lee R. Harper, Media, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 8, 1970, Ser. No. 79,253
Int. Cl. C08g *22/00*
U.S. Cl. 260—77.5 AM 17 Claims

Self-priming polyurethane sealants and a process for preparing them by incorporating a functional amine alkoxysilane into the prepolymerization of the isocyanate backbone of the polymeric composition.

3,711,446

CROSS-LINKABLE POLYMER COMPOSITIONS COMPRISING ETHYLENICALLY UNSATURATED POLYMER

Karl Brack, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed July 1, 1971, Ser. No. 158,982
Int. Cl. C08g *41/04*
U.S. Cl. 260—77.5 AC 9 Claims

Cross-linkable polymer compositions are described which comprise an ethylenically unsaturated polymer, the lactone adduct of a cyclic tertiary amine and a precursor of a polyfunctional nitrile N-oxide or nitrile imine. Typical lactone adducts are the propiolactone adducts of triethylenediamine, quinuclidine and N-methyl morpholine. These compositions, which cross-link on heating, are useful as sealants and adhesives and in coating compositions.

3,711,447

FIBER-FORMING POLYAMIDES WITH AN INCREASED CONTENT OF AMINO GROUPS PREPARED BY USING A PARTLY LINEAR ALIPHATIC, PARTLY CYCLOALIPHATIC POLYAMINE AS A MODIFIER

Walter Fester, Konigstein, Taunus, Ernst Hanschke, Burghausen, and Franz Jakob, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Aug. 19, 1970, Ser. No. 65,300
Claims priority, application Germany, Aug. 26, 1969, P 19 43 251.0
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 TF 12 Claims

Novel film and fiber-forming modified polyamides with an increased content of amino groups are obtained, if in the preparation of polyamides from the common starting compounds polyamines are added which have partly linear aliphatic, and partly cyclo-aliphatic and, optionally, aromatic structural units in the molecule—optionally, in admixture with polyamines having partly aromatic, and partly cyclo-aliphatic structural units in the molecule, and/or cyclo-aliphatic polyamines which may also have 1 aliphatic C-atom each between the cyclo-aliphatic rings and the amino groups.

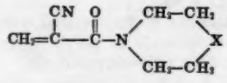
3,711,448

MORPHOLINEAMIDE OF α-CYANOACRYLATES AND POLYMERS THEREOF

Murray Goodman, Brooklyn, and Albert Wartman, New York, N.Y., assignors to Sutures, Inc., Coventry, Conn.

No Drawing. Filed June 7, 1971, Ser. No. 150,811
Int. Cl. C08f *3/74*; C07d *93/10, 87/34*
U.S. Cl. 260—78.4 N 6 Claims

Monomers having the formula:



wherein X is oxygen, sulfur or —CH_2—, and film-forming polymers thereof. The monomers are useful to form polymeric adhesives.

3,711,449

INTERPOLYMERS OF SULFOALKYLENE ACRYLATES

William H. Brendley, Jr., Hatboro, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Sept. 18, 1970, Ser. No. 73,677
Int. Cl. C08f *15/40, 15/02, 27/10*
U.S. Cl. 260—79.3 MU 1 Claim

In accordance with the present invention, copolymers containing units of sulfo-alkyl acrylate or methacrylate of the formula $H_2C{=}CH(R){-}CO_2{-}A{-}SO_3H$ wherein R is H or methyl and A is a (C_2—C_3)alkylene group are prepared in an essentially anhydrous medium. Such copolymers have unusual characteristics, including outstanding improvement in adhesion to numerous substrates and especially metals, which are lacking in analogous copolymers made in an aqueous medium. Hence the new copolymers are extremely useful in making coating compositions.

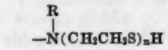
3,711,450

AIR-CURABLE POLYTHIOL POLYMERS

George F. Bulbenko, 48 Roundhill Road, Levittown, Pa. 19012

No Drawing. Continuation of abandoned application Ser. No. 31,431, Apr. 10, 1970. This application Apr. 20, 1971, Ser. No. 135,769
Int. Cl. C08g *23/00*
U.S. Cl. 260—79 16 Claims

Air-curable polythiol polymers are prepared by reacting primary or secondary amine-containing polymers having an aliphatic hydrocarbon backbone, optionally containing O, N, S, Si, or halogen atoms in the molecule, with ethylene sulfide to convert the amine groups to



groups, where R is H, lower alkyl or —CH_2CH_2SH and n=1 to 5, preferably 1.

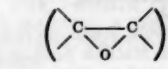
3,711,451

HYDROXYL CONTAINING LIQUID MERCAPTAN-TERMINATED ACRYLATE POLYMERS

Alan A. Csontos, Norton, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed May 12, 1971, Ser. No. 142,808
Int. Cl. C08d *3/02*
U.S. Cl. 260—79 10 Claims

Liquid mercaptan-terminated acrylate polymers containing pendant hydroxyl groups are obtained by preparing an intermediate polymer of an alkyl acrylate (a) with a with a vinylidene (>C=CH_2) monomer containing a hydroxyl group in the presence of a dixanthogen disulfide, and then hydrolyzing or pyrolyzing the intermediate polymer to form mercaptan groups, (b) with vinyl acetate in the presence of a dixanthogen disulfide, and then hydrolyzing the acetate groups to form hydroxyl groups either prior to or after forming the mercaptan groups, and (c) with a vinylidene monomer containing an epoxide



group in the presence of a dixanthogen disulfide, and then reacting the epoxide group with an alcohol to introduce hydroxyl groups either prior to or after forming the mercaptan groups. The polymers cure at application temperatures and have low temperature extensibility, may be formed into caulks, sealants, potting compounds and adhesives.

3,711,452

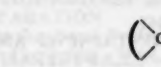
LIQUID ACRYLATE POLYMERS OF IMPROVED VULCANIZABILITY

Alan A. Csontos, Norton, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

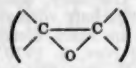
No Drawing. Filed May 12, 1971, Ser. No. 142,807
Int. Cl. C08d *3/02*
U.S. Cl. 260—79 5 Claims

Liquid mercaptan-terminated acrylate polymers that can be cured to a tack-free surface at application tem-

peratures and have low temperature extensibility are obtained by first preparing an intermediate polymer by polymerizing an alkyl acrylate with a vinylidene



monomer containing an epoxide



group in the presence of a dixanthogen disulfide, and then pyrolyzing the intermediate polymer at elevated temperatures under vacuum.

3,711,453

RANDOM COPOLYMERS OF SULFUR DIOXIDE WITH ALLYL ETHER OF POLYOXYALKYLENE GLYCOLS

William Ross Moore, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Nov. 4, 1970, Ser. No. 86,947
Int. Cl. C08f 13/06
U.S. Cl. 260—79.3 A 5 Claims

Random copolymers of sulfur dioxide and allylic compounds such as monoallyl ethers of polyoxyalkylene glycols and a selected mixture of said monoallyl ethers with allyl alcohol wherein the mol ratio of allyl alcohol to said monoallyl ether ranges from about 1:2 to about 2:1. The copolymers are useful as adhesives and as polymeric surfactants.

3,711,454

SYNERGISTIC PEROXIDE/OXIME/ISOCYANATE CURING SYSTEM

Teruyoshi Usamoto, Higashi-Osaka, and Tamotu Kondo, Toyonaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Filed Aug. 6, 1970, Ser. No. 61,802
Claims priority, application Japan, Aug. 11, 1969, 44/63,667
Int. Cl. C08f 15/40, 15/04
U.S. Cl. 260—80.78 4 Claims

A method for manufacturing a vulcanizate of an ethylene-propylene copolymer (hereinafter referred to as EPM) or an ethylene-propylene-nonconjugated diene terpolymer (hereinafter referred to as EPDM) with improved heat resistance is disclosed, in which an isocyanate compound and an oxime compound are used as coagents in a peroxide curing system for an ethylene-propylene copolymer or an ethylene-propylene-nonconjugated diene terpolymer.

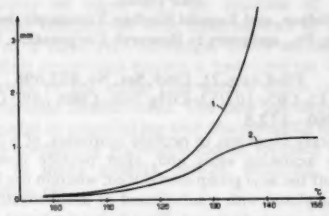
3,711,455

PROCESS FOR THE PREPARATION OF COPOLYMERS OF A MONOOLEFIN AND A DIOLEFIN AND THE PRODUCTS OBTAINED THEREBY

Salvatore Cucinella and Alessandro Mazzei, San Donato Milanese, Italy, assignors to Snam Progetti, S.p.A.

Filed Sept. 24, 1970, Ser. No. 75,221
Claims priority, application Italy, Sept. 24, 1969, 22,406/69
Int. Cl. C08f 1/42, 15/04
U.S. Cl. 260—85.3 R 16 Claims

A high molecular weight copolymer which exhibits crystallinity and is crosslinkable by curing is produced by reacting a monoolefin and a diolefin in the presence of a catalyst system consisting of (a) a vanadium compound of the type $V(NR_2)_4$ or $V(NR_2)_2X_2$ wherein R may be an alkyl, aryl or cycloalkyl radical and X may be a halogen, and (b) an aluminum compound of the type AlR_xX_{3-x} wherein R may be an alkyl, aryl or cycloalkyl radical or hydrogen and X may be a halogen, wherein $1 \leq x \leq 2$.



3,711,456

PROCESS FOR THE PREPARATION OF ETHYLENE-CARBOXYLIC ACID POLYMERS HAVING IMPROVED OPTICAL PROPERTIES

Ronald E. Gilbert, Shawnee Mission, Donald R. Jamieson, Merriam, and Bert H. Clampitt, Overland Park, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Apr. 22, 1971, Ser. No. 136,606
Int. Cl. C08f 15/04, 15/14
U.S. Cl. 260—88.1 R 5 Claims

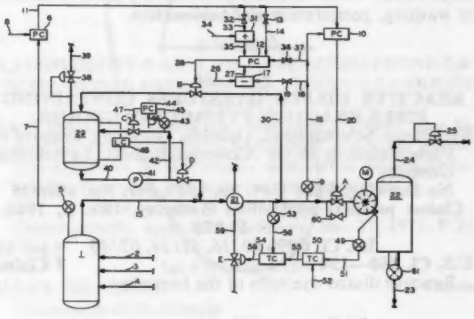
Ethylene-carboxylic acid polymers having substantially improved optical properties are obtained by intimately contacting a normally solid random ethylene-carboxylic acid polymer with a polyethylene solvent at an elevated temperature, and thereafter separating the solvent from the solid ethylene polymer.

3,711,457

FLUID TRANSFER CONTROL SYSTEM

Charles A. Ayres, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Feb. 19, 1971, Ser. No. 116,754
Int. Cl. C08f 1/96, 3/02, 3/06
U.S. Cl. 260—93.7 10 Claims



A fluid control system is provided whereby the continuous transfer of fluid from a source location to an ultimate location is accomplished while maintaining in the source location a substantially constant pressure and while maintaining in the ultimate location a substantially constant temperature: by controlling the transfer of fluid from the source location to the ultimate location in response to the pressures in the source location and in the transfer conduit connecting the source location and the ultimate location; and by controlling the heating of fluid in the transfer conduit in response to the temperatures in ultimate location and in the transfer conduit.

3,711,458
SUBSTITUTED AND UNSUBSTITUTED VINYLOXYCARBONYL GROUPS AS AMINO PROTECTING GROUPS IN THE SYNTHESES OF PEPTIDES

Roy A. Olofson, and Yasushi Stephen Yamamoto, both of State College, Pa., assignors to Research Corporation, New York, N.Y.

Filed Aug. 21, 1969, Ser. No. 852,096
Int. Cl. C07c *103/52*; C07g *7/00*; C08h *1/00*; C09h
U.S. Cl. 260—112.5 6 Claims

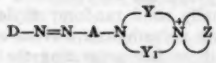
Temporary blocking, in peptide syntheses, of a free amino group by acylating same and, after peptide condensation, splitting off the acyl group introduced, wherein the free amino group is acylated with a substituted or unsubstituted vinyloxycarbonyl group is disclosed. The vinyloxycarbonyl group may be removed from a product peptide with bromine or another halogen followed by alcohol, with a mild acid or by mercuric ion induced hydrolysis.

3,711,459
AZO DYESTUFFS CONTAINING A SPIRO-PIPERAZINO CYCLIC RING

Gert Hegar, Schoenenbuch, Switzerland, assignor to Ciba-Geigy A.G., Basel, Switzerland

No Drawing. Filed Mar. 9, 1970, Ser. No. 17,857
Claims priority, application Switzerland, Mar. 20, 1969, 4,246/69
Int. Cl. C09b *29/36*; D06p *3/70*
U.S. Cl. 260—146 D 10 Claims

Basic azo dyestuffs of the formula



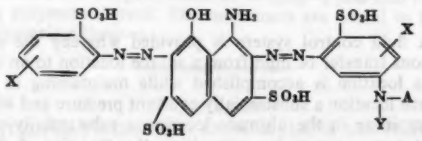
in which D represents the residue of a diazo component that may contain azo groups, A represents a benzene residue bound to the azo group in para-position to the cyclic amino group, Y and Y_1 each represents an alkylene group having 3, or preferably 2 carbon atoms and that may be branched, Z represents a chain of atoms forming a 5-, 6- or 7-membered ring with the nitrogen atom and that may contain hetero atoms in addition to carbon atoms, and/or contain a fused carbocyclic ring, and X represents an anion. Valuable dyestuffs especially for coloring polyacrylonitrile fibres various shades having good fastnesses to washing, perspiration and sublimation.

3,711,460
REACTIVE DISAZO DYESTUFFS CONTAINING FIBER-REACTIVE PYRIMIDINE GROUPS

Karl-Heinz Schündehütte, Opladen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 30, 1967, Ser. No. 686,815
Claims priority, application Germany, Dec. 5, 1966, F 50,851
Int. Cl. C09b *62/16, 62/24, 62/40*
U.S. Cl. 260—154 7 Claims

Reactive disazo dyestuffs of the formula



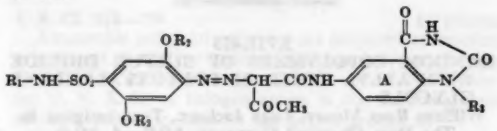
wherein X is hydrogen, sulfonic acid, halo, nitro, lower alkyl or lower alkoxy; R is hydrogen, alkyl or aryl; Y is hydrogen or $—CH_3$; and A is a reactive heterocyclic ring (especially a reactive pyrimidine ring) which dyestuffs are useful in dyeing cellulose to give dyeings with good light and wet fastness and in dyeing wool, silk and polyamide fibers.

3,711,461
MONOAZO DYESTUFFS CONTAINING AN ACETYLAMINO 2,4 - DIOXO - 1,2,3,4-TETRAHYDROQUINAZOLINE

Wolfgang Pretzer, Kelkheim, Taunus, and Joachim Ribka, Offenbach (Main), Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Nov. 3, 1970, Ser. No. 86,634
Claims priority, application Germany, Nov. 6, 1969, P 19 55 808.8
Int. Cl. C09b *29/36*
U.S. Cl. 260—154 7 Claims

Water-insoluble monoazo dyestuffs of the general formula



wherein R_1 is hydrogen, lower alkyl, aryl, aralkyl or cycloalkyl, which may be substituted by lower alkyl or halogen, R_2 is lower alkyl, R_3 is hydrogen or lower alkyl and A is a benzene nucleus substituted by lower alkyl, lower alkoxy on halogen.

Said pigments can be used, for example, for dyeing or printing plastics, caoutchouc, natural and synthetic resins textile fibrous materials or paper. Furthermore they can be employed for the preparation of printing inks, lacquers and dispersion paints. The novel pigments possess good to very good fastness properties.

3,711,462
METHOD OF CLARIFYING POLYSACCHARIDE SOLUTIONS

Milton K. Abdo, Dallas, Tex., assignor to Mobile Oil Corporation

No Drawing. Filed Apr. 1, 1970, Ser. No. 24,887
Int. Cl. C07c *47/18*
U.S. Cl. 260—209 10 Claims

The specification discloses a method for removing bacterial debris from an aqueous solution of a microbially-produced polysaccharide. A montmorillonite clay is dispersed in the solution to absorb the debris. A monovalent and/or divalent salt is added if not already present in the solution. Next, a clay coagulant is added to the solution to flocculate the clay and adsorbed debris which in turn is then removed from the clarified solution by mechanical means.

3,711,463
AZIRIDINOMETHYL PHENOLIC COMPOUNDS

Heinz Uelzmann, Cuyahoga Falls, Ohio, assignor to The General Tire & Rubber Company

No Drawing. Filed Mar. 11, 1968, Ser. No. 711,901
Int. Cl. C07d *23/02, 23/06, 31/40*
U.S. Cl. 260—239 E 13 Claims

Aziridinomethyl phenolic compounds of the formula:

$$(Az—CH_2)_n—R$$

wherein

Az is an aziridino or substituted aziridino group, *n* is a number from 1 to 3, and
R is a phenolic group

are prepared by reaction of ethylenimine or equivalent with a polymethylol phenolic compound or its precursors, e.g., a mixture of the phenol and formaldehyde or a formaldehyde donor. A typical compound is 2,6-bis-(N-ethylenimino-methyl)-4-methyl phenol.

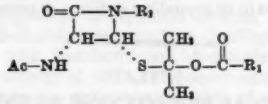
3,711,464

1 - FORMYL - 2 - ALPHA-(2-ACYLOXY-2-PROPYLMERCAPTO) - 3 ALPHA - N - ACYL-AMINO-AZETIDIN-4-ONES AND PROCESS FOR THEIR PREPARATION

Karl Heusler, Basel, Switzerland, and Robert Burns Woodward, Cambridge, Mass., assignors to Ciba-Geigy Corporation

No Drawing. Filed July 18, 1969, Ser. No. 843,204
Claims priority, application Switzerland, July 23, 1968, 10,998/68; Dec. 11, 1968, 18,507/68
Int. Cl. C07d *25/02*
U.S. Cl. 260—239 A 9 Claims

1 - R_2 - 2α - (2 - acyloxy-2-propylmercapto)-3α-N-Ac-amino-azetidine-4-ones of formula



(I)

wherein Ac represents the acyl residue of an organic acid, R_1 represents an organic residue and R_2 represents a hydrogen atom or a formyl group, have antibacterial properties; they are primarily useful as intermediates.

3,711,465

PROCESS FOR THE PREPARATION OF N-ALKYL-LACTAMS HAVING AT LEAST 10 RING MEMBERS

Heinz Lussi and Hans Dalla Torre, Domat-Ems-Grisons, Switzerland, assignors to Inventa AG, Zurich, Switzerland

No Drawing. Filed Mar. 17, 1970, Ser. No. 20,406
Claims priority, application Switzerland, Mar. 18, 1969, 4,029/69
Int. Cl. C07d *41/00*
U.S. Cl. 260—239.3 R 18 Claims

The preparation of N-alkyllactams having at least 10 members. Reacting the lactam with dialkyl sulphate to form O-alkyllactim ether then saponifying the unconverted dialkyl sulphate by aqueous strong base, dry the O-alkyllactim and isomerize to produce the N-alkyllactam.

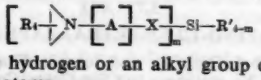
3,711,466

AZIRIDINYL SILANES

Heinz Uelzmann, Cuyahoga Falls, and David C. Hidinger, Jr., Akron, Ohio, assignors to The General Tire & Rubber Company

No Drawing. Filed Feb. 19, 1968, Ser. No. 706,644
Int. Cl. C07f *7/04, 7/10*
U.S. Cl. 260—239 E 6 Claims

Aziridinyl silanes of the general formula:



where R is hydrogen or an alkyl group of from 1 to 6 carbon atoms,

where R' is an alkyl, alkoxy, alkylthio, cycloalkyl, cycloalkoxy, or cycloalkylthio group of from 1 to 6 carbon atoms,

where each R and each R' may be the same or different,

where X is O, S, or

where A is a hydrocarbon chain which can be interrupted by ether, thioether, ester, or

linkages, which can contain alkoxy, alkylthio, or acetal side groups that are attached to the carbon atoms of the hydrocarbon chain and that do not interfere with the aziridinyl radical, and which has a total of from 2 to 20 carbon atoms, the nitrogen atom of the aziridine group being attached to a carbon atom of A, X being attached to a carbon atom of A, and

where *m* is an integer of from 1 to 4 are prepared in a variety of ways, e.g., by reaction of hydroxy aziridino compounds with chlorosilanes in the presence of a basic HCl scavenger or by addition of an aziridino compound having a hydrogen on the nitrogen atom of the imino ring with a silane containing an activated double bond. The new aziridinyl silanes are useful in crosslinking and chain-ending carboxylic group containing polymers and in forming compositions to make gaskets, puttys, caulking, weatherstripping, etc.

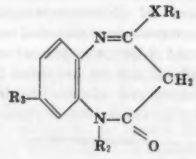
3,711,467

2-(ALKOXY OR ALKYLMERCAPTO)-5-PHENYL-4H-3,5-DIHYDRO-1,5-BENZODIAZEPIN-4-ONES

Karl Heinz Weber, Gau-Algesheim; Adolf Bauer; Peter Danneberg, both of Ingelheim/Rhine, and Klaus Minck, Gau-Algesheim, all of Germany, assignors to Boehringer Ingelheim G.m.b.G., Ingelheim am Rhine, Germany

Filed Oct. 19, 1971, Ser. No. 194,002
Int. Cl. C07d *53/04*
U.S. Cl. 260—239.3 B 4 Claims

Compounds of the formula



wherein

R_1 is straight or branched alkyl of one to four carbon atoms,

R_2 is phenyl, o-halo-phenyl, o-nitro-phenyl or o-trifluoromethyl-phenyl,

R_3 is halogen, nitro or trifluromethyl, and X is oxygen or sulfur;

the compounds are useful as psychosedatives and as intermediates for the preparation of tranquillizers.

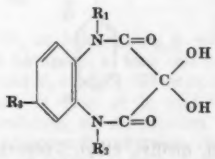
3,711,468

3,3-DIHYDROXY-5-ARYL-1H-1,5-BENZODIAZEPINE-2,4-(3H,5H)-DIONES AND THEIR ANHYDROUS 2,3,4-TRIONE FORM

Adolf Bauer, Ingelheim/Rhine; Karl Heinz Weber, Gau-Algesheim; Peter Danneberg, Ockenheim, and Klaus Minck, Gau-Algesheim, all of Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhine, Germany

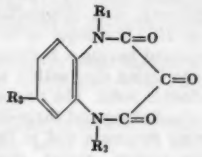
Filed Jan. 26, 1972, Ser. No. 221,072
Claims priority, application Germany, Jan. 27, 1971, P 21 03 744.5
Int. Cl. C07d *53/04*
U.S. Cl. 260—239.3 B 6 Claims

Compounds of the formula



wherein R_1 is hydrogen, straight or branched alkyl of one to four carbon atoms, ω-hydroxy-(alkyl of one to four carbon atoms) or allyl,

R_2 is phenyl, halo-phenyl, hydroxy-phenyl, trifluoromethyl-phenyl, nitro-phenyl or pyridyl, and
R_3 is fluorine, chlorine, bromine, trifluoromethyl or nitro, and their anhydrous 2,3,4-trione analogs of the formula



wherein R_1, R_2 and R_3 have the meanings defined above; the compounds are useful as tranquilizers and anticonvulsives, and also as intermediates for the preparation of other 1H-1,5-benzodiazepine-2,4-[3H,5H]-diones.

3,711,469

PRODUCTION OF 3,3-DISUBSTITUTED β-LACTAMS

Frans Merger, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed May 19, 1969, Ser. No. 825,931
Int. Cl. C07d *25/02*
U.S. Cl. 260—239 A **4 Claims**

Production of 3,3-disubstituted β-lactams by dehydrohalogenation of β-halocarboxylic amides in the presence of basic compounds at elevated temperature, and the new 3,3-disubstituted β-lactams themselves. The known and new compounds which can be prepared by the process according to the invention are valuable starting materials for the production of fibers, textile auxiliaries, pesticides and plastics.

3,711,470

5-PHENYL-7-BROMO-1H-1,5-BENZODIAZEPINE-2,4-(3H,5H)-DIONES

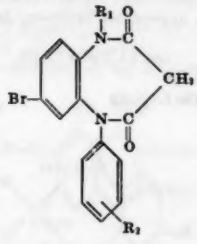
Karl-Heinz Weber, Gau-Algesheim, Karl Zeile and Peter Danneberg, Ingelheim am Rhein, Rolf Giesemann, Bingen, and Karl Heinz Hauptmann, deceased, late of Ingelheim am Rhein, Germany, by Maria Hauptmann, heir, Bonn am Rhine, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

No Drawing. Continuation-in-part of application Ser. No. 89,482, Nov. 13, 1970, which is a continuation of abandoned application Ser. No. 703,188, Feb. 5, 1968. This application Feb. 1, 1971, Ser. No. 111,714

Claims priority, application Germany, Feb. 7, 1967, P 16 70 190.9; Jan. 18, 1968, P 16 70 305.2, P 16 70 306.3

Int. Cl. C07d *53/04*
U.S. Cl. 260—239.3 B **6 Claims**

Compounds of the formula



wherein

R_1 is hydrogen, methyl, ethyl, hydroxy-ethyl or (cycloalkyl of 3 to 6 carbon atoms)-methyl, and
R_2 is hydrogen or halogen;

the compounds are useful as psychosedative and anticonvulsives.

3,711,471

PURIFICATION OF 6-[D-α-(3-GUANYL-1-UREIDO)PHENYLACETAMIDO]PENICILLANIC ACID

Murray A. Kaplan, Syracuse, and Alphonse Peter Granatek, Baldwinsville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Feb. 3, 1971, Ser. No. 112,452
Int. Cl. C07d *99/18*
U.S. Cl. 260—239.1 **4 Claims**

6-[D-α-(3-Guanyl-1-ureido)phenylacetamido]penicillanic acid is purified by reaction with nitric acid to form its crystalline nitrate (as a monohydrate) which in turn is converted by reaction with a base to the crystalline zwitterion hemihydrate. The last named is converted to its crystalline potassium salt (dihydrate) and to its crystalline sodium salt (monohydrate).

3,711,472

OPTICAL BRIGHTENING AGENTS

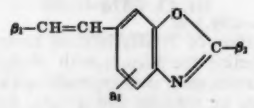
Adolf Emil Siegrist, Basel, Peter Liechti, Binningen, Erwin Maeder, Aesch, Basel-Land, Leonardo Guglielmetti, Birsfelden, and Hans Rudolf Meyer and Kurt Weber, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Original application Oct. 21, 1966, Ser. No. 588,318. Divided and this application Aug. 28, 1970, Ser. No. 68,013

Claims priority, application Switzerland, Oct. 28, 1965, 14,902/65; July 4, 1966, 9,649/66

Int. Cl. C09b *23/00, 23/14*
U.S. Cl. 260—240 CA **6 Claims**

The present invention relates to new compounds of the formula



in which a_1 represents a hydrogen atom, a methyl group or a halogen atom, β_1 denotes a residue of the series phenyl, diphenyl, 1-naphthyl or 2-naphthyl and β_2 represents a residue of the series phenyl, diphenyl, styryl, stilbenyl, p-phenyl-stilbenyl, 1-naphthyl or 2-naphthyl, and in which terminal phenyl and naphthyl residues may contain alkyl, halogen or alkoxy groups.

These new compounds represent valuable optical brightening agents.

3,711,473

3-HYDRAZINO-1,2,8,9-TETRAAZAPHENALENES

Karl J. Doebel, Ossining, and John E. Francis, Pleasantville, N.Y., assignors to Ciba-Geigy Corporation

No Drawing. Division of application Ser. No. 715,555, Mar. 25, 1968, now Patent No. 3,578,665, which is a continuation-in-part of applications Ser. No. 445,762, Apr. 5, 1965, Ser. No. 539,303, Apr. 1, 1966, and Ser. No. 583,980, Oct. 3, 1966, Ser. No. 539,303, being a continuation-in-part of applications Ser. No. 445,762, and Ser. No. 583,980, being a continuation-in-part of applications Ser. No. 539,303 and Ser. No. 445,762, all continuation-in-part applications now abandoned. This application Apr. 6, 1970, Ser. No. 31,067

Int. Cl. C07d *51/02*
U.S. Cl. 260—240 G **13 Claims**

3-hydrazino-1,2,8,9-tetraazaphenalenes optionally substituted in the 4, 5, 6, 7 and/or 9 positions and their salts are cardiovascular agents and are prepared from 3-thiono-2,3-dihydro-1,2,8,9-tetraazaphenalenes. Representative embodiments are 3-hydrazino-1,2,8,9-tetraazaphenalene and 3-hydrazino-9-phenyl-1,2,8,9-tetraazaphenalene.

3,711,474

HETEROCYCLIC NITROGEN- AND SULFUR-CONTAINING OPTICAL BRIGHTENER COMPOUNDS AND DETERGENTS AND BLEACH COMPOSITIONS CONTAINING SAME

Warren I. Lyness, Mount Healthy, Ronald T. Amel, Springfield Township, Hamilton County, and Gary E. Booth, Oxford, Ohio (all % The Procter & Gamble Company, Miami Valley Laboratories, Cincinnati, Ohio 45239)

No Drawing. Filed July 31, 1969, Ser. No. 846,601

Int. Cl. C07d *91/10*

U.S. Cl. 260—240 CA 13 Claims

Optical brightener compounds defined as 2-benzisothiazolonyl-S-dioxide compounds, o-disulfophenylimidinyl compounds and benzisothiazolyl-S-dioxide compounds. The optical activity of these compounds can be employed to advantage in the optical brightening of a wide variety of natural and synthetic materials. They are useful in the brightening of fabrics and find application in the preparation of laundry detergent compositions and hypochlorite bleach-containing compositions.

3,711,475

2,3-DIHYDRO-1-OXA-4-THIA-3,5-DIAZIN-2-ONE-4,4-DIOXIDES

Hans Disselkotter, Cologne, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

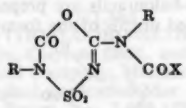
No Drawing. Filed July 15, 1970, Ser. No. 55,248

Claims priority, application Germany, Aug. 8, 1969, P 19 40 369.1

Int. Cl. C07d *93/24*

U.S. Cl. 260—243 R 15 Claims

Heterocyclic compounds of the formula



in which R represents an optionally substituted aliphatic, cycloaliphatic or araliphatic radical, and X represents halogen are obtained by reacting N-carbonyl sulphamic acid halides with an isocyanate RNCO in the presence of a halide of an element of Groups I–B, II–B, III–A, IV–A, IV–B or V–B of the Mendeleev Periodic Table, as catalyst, or in the presence of a substance which is at least partly converted into one of these halides in the reaction mixture, at a temperature of from −70 to +70° C.

The new compounds show herbicidal activity.

3,711,476

SPIRO 2H-3,1-BENZOXAZINE DERIVATIVES

James L Diebold, Broomall, and Milton Wolf, West Chester, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed March 12, 1971, Ser. No. 123,849

Int. Cl. C07d *57/14*

U.S. Cl. 260—244 R 5 Claims

The disclosure is directed to derivatives of spiro 2H-3,1-benzoxazine prepared by reacting a mixture of 2-amino-5-chlorophenylbenzyl alcohol and an appropriately substituted piperidone, isatin or quinuclidone derivative. The compounds are useful as anti-amebics in vitro, and some are central nervous depressants.

3,711,477

5-AMINO-1,2,3-TRITHIANES

Hans-Peter Schelling, Oberwil, Basel-Land, Switzerland, and Fred Kuhnen, Weil, (Rhine), Germany, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

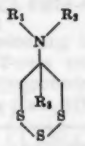
No Drawing. Filed Aug. 6, 1970, Ser. No. 61,839

Claims priority, application Switzerland, Aug. 15, 1969, 12,410/69

Int. Cl. C07d *87/46*

U.S. Cl. 260—247.1 9 Claims

The invention concerns new 1,2,3-trithiane compounds of the formula:



wherein

R_1 and R_2 are each hydrogen, alkyl of 1 to 4 carbon atoms, allyl, phenyl, benzyl, cyclopentyl or cyclohexyl, or together with the nitrogen atom pyrrolidine, piperidine or morpholine, and

R_3 is hydrogen or alkyl of 1 to 4 carbon atoms,

and acid addition salts thereof.

The compounds are useful as pesticides. More particularly the compounds possess insecticidal, acaricidal, nematocidal and fungicidal properties.

3,711,478

3-ARYL-BENZAZINES

Klaus Irmscher, Josef Kramer, Gerhard Cimbollek, Dieter Orth, Herbert Nowak, and Karl-Otto Freisberg, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

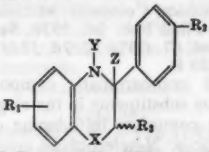
No Drawing. Filed Nov. 13, 1969, Ser. No. 876,611

Claims priority, application Germany, Nov. 18, 1968, P 18 09 454.7; Nov. 23, 1968, P 18 10 561.8

Int. Cl. C07d *93/12*

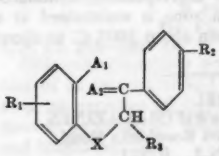
U.S. Cl. 260—243 R 23 Claims

3 - aryl-benzazines having serum cholesterol lowering activity of the formula

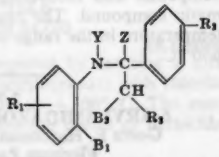


(I)

wherein R_1 and R_2 are H, OH, esterified OH, alkyl, alkoxy or benzyloxy, R_3 is alkyl, X is O or S, Y is H or acyl and Z is H or Y and Z collectively are a C–N bond are prepared by cyclizing of the following classes of compounds:



(II)



(III)

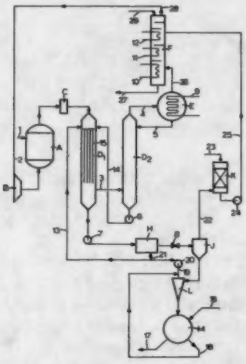
wherein A_1 is NH_2 or halogen, A_2 is =O, =S, =NH, (H, NH_2) or (H, halogen), at least one being a nitrogen function, and B_1 and B_2 are OH, SH or reactive functional derivatives thereof, or (one of B_1 and B_2 only) H or halogen; or by reducing or dehydrating compounds of Formula I and compounds otherwise corresponding to Formula I wherein Z is OH; or by hydrolyzing or hydrogenating compounds otherwise corresponding to Formula I wherein R_1 and/or R_2 is a functionally modified OH group convertible to an OH group by hydrolysis or hydrogenolysis.

3,711,479

PROCESS FOR SEPARATING MELAMINE FROM A HOT SYNTHESIS GAS MIXTURE WHICH CONTAINS MELAMINE VAPOR

Johannes D. M. Verstegen and Petrus J. M. van Nassau, Geleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed Apr. 1, 1971, Ser. No. 130,428
Claims priority, application Netherlands, Apr. 3, 1970, 7004765
Int. Cl. C07d 55/24
U.S. Cl. 260—249.7 P 5 Claims



A process for recovering melamine from hot synthesis gases containing melamine, NH_3 and CO_2 is disclosed wherein the hot synthesis gases are contacted with an aqueous solution of ammonium carbamate. The ammonium carbamate decomposes endothermically to NH_3 and CO_2 and cools the synthesis gases thereby desubliming melamine therefrom.

3,711,480

SYNTHESIS OF PERCHLORINATED CYANO COMPOUNDS

Sven H. Ruetman, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 26, 1970, Ser. No. 14,637
Int. Cl. C07d 51/76, 51/36
U.S. Cl. 260—250 R 11 Claims

Perchlorinated cyanoaromatic compounds containing at least 2 chlorine substituents in the ring are prepared in a process which comprises introducing one of an alkylamino homocyclic or N-heterocyclic aromatic compound, usually carried in a substantially inert diluent, both being in the vapor phase, into a reaction zone and contacting this mixture in a rapid, turbulent mixing step with at least 15 moles of chlorine per mole of alkylamino aromatic compound and recovering the corresponding cyanoaromatic compound. The reaction zone is maintained at a temperature in the range of from about 500° C. to about 650° C.

3,711,481

6-ARYL-IMIDAZO(2,1-a)PHTHALAZINES

Goetz E. Hardtmann, 208 Brooklake Road, Florham Park, N.J. 07921

No Drawing. Filed Apr. 24, 1970, Ser. No. 31,781
Int. Cl. C04d 51/06
U.S. Cl. 260—250 A 8 Claims

The invention discloses compounds which are 6-aryl-imidazo(2,1-a)phthalazines which are useful by reason of exhibiting pharmacological activity in animals, e.g., anti-inflammatory agents. Said 6-aryl-imidazo(2,1-a)phthalazines are prepared by oxidation of the corresponding 6-aryl-5,6-dihydro-imidazo(2,1-a)phthalazines which in turn are prepared by reacting a corresponding 6-unsubstituted-imidazo(2,1-a)phthalazine with an aryl lithium compound or an aryl magnesium halide.

3,711,482

2-ACETYL-3-ETHYLPYRAZINE AND PROCESS FOR THE PREPARATION THEREOF

Braja D. Mookherjee, Matawan, Christopher Giacino, Califon, Elizabeth A. Karoll, Old Bridge, and Manfred H. Vock, West Orange, N.J., assignors to International Flavors & Fragrances, New York, N.Y.

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,740
Int. Cl. C07d 51/76
U.S. Cl. 260—250 R 7 Claims

2-acetyl-3-ethylpyrazine; processes for altering the flavor of consumable materials, particularly foodstuffs, which comprise adding such pyrazine to the material; the products so produced; flavoring and fragrance compositions utilizing such pyrazine; and processes for producing such pyrazine.

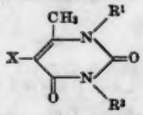
3,711,483

1,3,6-SUBSTITUTED 5-HALOURACILS

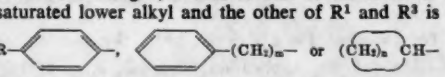
Shigeo Senda, 30 Nikkocho-2-chome, Gifu, Japan

No Drawing. Filed Apr. 16, 1970, Ser. No. 29,241
Claims priority, application Japan, Apr. 19, 1969, 44/30,531; May 29, 1969, 44/42,428
Int. Cl. C07d 51/30
U.S. Cl. 260—260 8 Claims

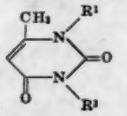
1,3,6-substituted 5-halouracils of the formula



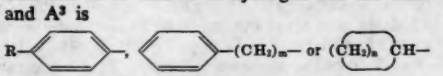
wherein X is halogen, one of R^1 and R^3 is saturated or unsaturated lower alkyl and the other of R^1 and R^3 is



wherein R is hydrogen, lower alkyl, lower alkoxy, or halogen; m is 1 or 2; and n is an integer of 4 or 5; provided that R^3 is other than cyclohexyl. These compounds are useful as intermediates in the production of the corresponding 5-amino derivatives which are pharmaceutical agents. The 5-halouracils are prepared by halogenating 1,3,6-substituted uracils of the formula



wherein one of A^1 and A^3 is hydrogen and the other of A^1 and A^3 is



provided that A^3 is other than cyclohexyl.

3,711,484

DERIVATIVES OF N-METHYLPIPERAZINE

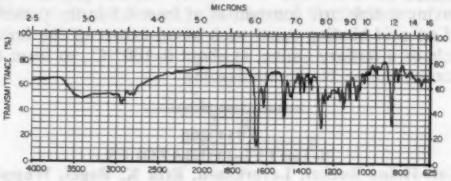
Andrea Pedrazzoli and Leone Dall'Asta, Milan, Italy, assignors to MIDY, Paris, France

No Drawing. Continuation-in-part of application Ser. No. 660,227, Aug. 14, 1967, now Patent No. 3,580,914, dated May 25, 1971. This application Oct. 5, 1970, Ser. No. 78,236
Claims priority, application Great Britain, Aug. 23, 1966, 37,827/66
Int. Cl. C07d 51/70
U.S. Cl. 260—268 R 8 Claims

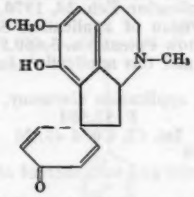
This invention relates to N-methyl-N'-ethyl-piperazines in which the ethyl radical is β,β-disubstituted with (i) a phenyl or phenoxymethylene radical which is unsubstituted or substituted in the ring with one alkyl or cycloalkyl group or with 2 or 3 chlorine atoms or with 2 chlorine atoms and a nitro group, and (ii) a benzyloxy radical substituted in the ring with 1, 2 or 3 chlorine atoms; and pharmaceutically acceptable acid addition

salts thereof. All of the compounds have anti-bacterial and antiprotozoan activity.

3,711,485
METHOD FOR EXTRACTION OF THE OCOTEA ALKALOID, GLAZIOVINE
Giorgio Ferrari, 8 via Lario, Milan, Italy, and Cesare Casagrande, 13 via per Brunate, Como, Italy
Continuation-in-part of application Ser. No. 676,054, Oct. 18, 1967. This application Oct. 7, 1970, Ser. No. 78,766
Int. Cl. C07d *33/38*
U.S. Cl. 260—289 A **4 Claims**



Crystalline glaziovine having the formula:



and its acid addition salts have psychotropic properties useful in therapeutic compositions for the relief of anxiety. The alkaloid is obtained by extraction of the bark and leaves of the genus Ocotea (Lauraceae), species glaziovii.

3,711,486
SUBSTITUTED (TRIFLUOROMETHYL)PYRIDINES
Florence E. Torba, Clayton, Calif., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Original application Mar. 17, 1969, Ser. No. 807,980, now Patent No. 3,609,158, dated Sept. 28, 1971. Divided and this application Oct. 2, 1970, Ser. No. 77,738
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 **6 Claims**

Disclosed as novel compounds are (trifluoromethyl) pyridine derivatives which are substituted by a hydroxy, mercapto, alkoxy, loweralkenoxy, aryloxy, alkylthio, arylthio, alkylsulfonyl, arylsulfonyl, amino, hydrazino or oxyloweralkanoic acid or acid derivative group and optionally by chlorine and/or fluorine. Any remaining positions on the pyridine ring are taken up by hydrogen. The compounds have utility as herbicides and as active constituents of various miticidal, anthelmintic, fungicidal and bacteriocidal compositions.

3,711,487
CERTAIN α,α-DISUBSTITUTED BENZYL-IMIDAZOLES AND SALTS
Wilfried Draber, Helmut Timmler, Karl-Heinz Buchel, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Feb. 19, 1970, Ser. No. 12,830
Claims priority, application Germany, Feb. 22, 1969, P 19 08 991.9
Int. Cl. C07d *31/50, 49/36*
U.S. Cl. 260—294.8 G **22 Claims**

Anti-mycotic compounds and salts are provided which are α,α-disubstituted benzylimidazoles or salts. Preparations in various dosage forms are disclosed containing 0.5–10% of active compound. A representative compound is cyclohexylphenyl-4-pyridyl-1-imidazolyl-methane. The compounds are active against both Hyphomycetes and yeasts and are compatible with warm-blooded animals.

3,711,488
PROCESS FOR PREPARING N-ARYL PYRID-2-ONES
Horst O. Bayer, Levittown, and Patrick J. Nulty, Wyndmoor, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.
No Drawing. Filed June 9, 1970, Ser. No. 44,862
Int. Cl. C07d *31/36*
U.S. Cl. 260—295.5 R **6 Claims**

Novel compounds belonging to the class of 1-aryl-3-carboxy-4-methylpyrid-2-ones and a novel method for preparing them. These compounds possess biological activity and in particular are plant growth regulators.

3,711,489
CERTAIN 8,9-DIHYDRO[3,4,7,8]CYCLOOCTA[1,2-d] IMIDAZOLES
Joseph G. Lombardino, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.
No Drawing. Filed Mar. 31, 1971, Ser. No. 129,977
Int. Cl. C07d *31/42, 49/36*
U.S. Cl. 260—296 P **5 Claims**

2 - substituted dibenzo[b,f]thiepin[4,5-d]- and dibenzo-[3,4,7,8]cycloöcta[1,2 - d]imidazoles and the pharmaceutically acceptable acid addition salts thereof, a novel class of antiinflammatory agent.

3,711,490
METHOD FOR PREPARING 2,3-PYRIDINEDIOL
John Valdemar Brammer Petersen and Niels Clauson-Kaas, Farum, Denmark, assignors to Ciba-Geigy Corporation
No Drawing. Division of application Ser. No. 751,650, June 25, 1968, now Patent No. 3,553,224, dated Jan. 5, 1971, which is a division of application Ser. No. 544,685, Apr. 25, 1966, now Patent No. 3,419,570. This application Aug. 19, 1970, Ser. No. 65,328
Int. Cl. C07d *31/30*
U.S. Cl. 260—297 R **2 Claims**

2,3-pyridinediol is prepared by a process comprising hydrolizing an alkali metal 3-hydroxy-2-oxo-1(2H)-pyridine sulfonate and recovering the 2,3-pyridinediol from the resulting hydrolyzate.

3,711,491
5-CHLORO-3-OXO-1,2,4-THIADIAZOLINES
Gerhard Zumach, Cologne, Hans Holtschmidt, Leverkusen-Schlebusch, and Engelbert Kuhle, Bergisch Gladbach, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Jan. 21, 1970, Ser. No. 4,759
Claims priority, application Germany, Feb. 13, 1969, P 19 07 116.0
Int. Cl. C07d *91/10*
U.S. Cl. 260—302 D **18 Claims**

Chlorothiadiazolines are prepared by reacting a mixture of an isocyanate and an isothiocyanate with chlorine at a temperature of from −20 to +100° C. The compounds produced by the process are useful as herbicides and fungicides.

3,711,492
THIADIAZOLIDINEDIONES
Wolfgang Rohr, Mannheim, Adolf Fischer, Mutterstadt, and Albrecht Zschocke, Bad Duerkheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Dec. 8, 1970, Ser. No. 96,273
Int. Cl. C07d *91/60*
U.S. Cl. 260—302 D **5 Claims**

New and valuable thiadiazolidinediones having a good herbicidal action and a process for controlling the growth of unwanted plants with these compounds.

3,711,493

PLANT GROWTH REGULATING COMPOSITION

Edwin Francis George, Eversley, Nr. Basingstoke, and Alan John Davidson, Wokingham, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jan. 25, 1971, Ser. No. 109,569

Claims priority, application Great Britain, Feb. 10, 1970, 6,403/70; June 16, 1970, 29,123/70

Int. Cl. C07f 9/38; A01n 5/00

U.S. Cl. 260—502.4 R 3 Claims

2-(s,s-Dihydrocarbyl) sulfonium ethanephosphonic acid compounds, and their salts and esters, are made and are useful in regulating plant growth by accelerating ripening and abscission, dwarfing, breaking dormancy as well as altering the sex ratio of flowers.

3,711,494

O,O-DIALKYLTHIONOPHOSPHORIC OR O,O-DIALKYLDITHIOPHOSPHORIC ESTERS OF OXADIAZOLES

Heinrich Adolphi, Limburgerhof, Heinz Eilingsfeld, Frankenthal, and Manfred Patsch, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Rhineland-Pfalz, Germany

No Drawing. Filed Aug. 19, 1970, Ser. No. 65,266

Claims priority, application Germany, Aug. 23, 1969, P 19 42 993.7

Int. Cl. C07d 85/54

U.S. Cl. 260—307 G 6 Claims

O,O-dialkylthionophosphoric or O,O-dialkyldithiophosphoric esters of alkyl-1,3,4 oxadiazoles and di-(O,O-dialkylthionophosphoric or O,O-dialkyldithionophosphoric esters) of 1,3-4-oxadiazoles having a strong insecticidal and acaricidal action, and a process for controlling insects and mites with these compounds.

3,711,495

ISOXAZALIN-3-YL-SUBSTITUTED-5-NITROIMIDAZOLES

Peter Kulsa, Scotch Plains, N.J., and Clarence S. Rooney, Beaconsfield, Quebec, Canada, assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 7, 1970, Ser. No. 1,307

Int. Cl. C07d 85/16

U.S. Cl. 260—307 D 4 Claims

Substituted nitroimidazoles having a 1-alkyl or hydroxyalkyl substituent; a 5-nitro substituent; and a 2-substituent, the latter being a Δ^2-4,5-disubstituted-isoxazoline. The 4,5-substitution on the isoxazolinemoiety is a saturated alkyl ring structure. These compounds have anti-bacterial and anti-protozoal activity against human and animal trypanosomiasis and trichomoniasis.

3,711,496

4-ACYLAMINO-1,2,4-TRIAZOLE DERIVATIVES

Max Matter, Basel, and Karl Michel, Wohlen, Switzerland, assignors to Aktiebolaget Bofors, Bofors, Sweden

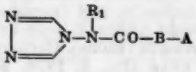
No Drawing. Filed Sept. 23, 1970, Ser. No. 74,921

Claims priority, application Switzerland, Sept. 24, 1969, 14,448/69

Int. Cl. C07d 55/06, 99/04

U.S. Cl. 260—308 R 6 Claims

Pharmaceutical active 4-acylamino-1,2,4-triazole derivatives having the general formula:



in which R_1 is tetrahydrofurfuryl or an alkyl having 1–4 carbon atoms, A is phenyl, naphthyl, benzylthio or benzyloxy, B is a single bond, tetrahydrofuryl-ethyl or a straight or branched alkyl having 1–5 carbon atoms.

3,711,497

PROCESS FOR THE PREPARATION OF N-TRITYLIMIDAZOLE

Karl-Heinz Buchel, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Sept. 24, 1968, Ser. No. 762,161. Divided and this application May 15, 1970, Ser. No. 37,850

Claims priority, application Germany, Sept. 26, 1967, F 53,587

Int. Cl. C07d 49/36

U.S. Cl. 260—309 7 Claims

Reacting an imidazole with a trityl halide (i.e., a triphenyl halomethane) in a polar inert organic solvent having a dielectric constant of at least 4.5 in the presence of an acid-binding agent such as an excess of the imidazole or a tertiary amine, at about 0–100° C., to form the corresponding N-tritylimidazole.

3,711,498

N-TRITYL-IMIDAZOLES

Karl-Heinz Buchel, Leverkusen, Erik K. Regel, Wuppertal-Kronenberg, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

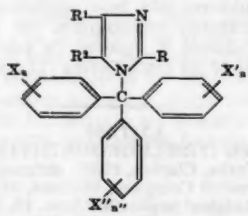
No Drawing. Application Feb. 24, 1970, Ser. No. 13,797, which is a division of application Ser. No. 758,594, Sept. 9, 1968, now Patent No. 3,660,577, dated May 2, 1972. Divided and this application Jan. 17, 1972, Ser. No. 218,521

Claims priority, application Germany, Sept. 15, 1967, F 53,504

Int. Cl. C07d 49/36

U.S. Cl. 260—309 3 Claims

N-trityl-imidazoles and salts thereof of the formula:



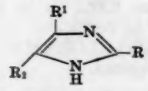
wherein

R, R^1 and R^2 are hydrogen, lower alkyl or phenyl, or R^1 and R^2 together form an anellated benzene ring,

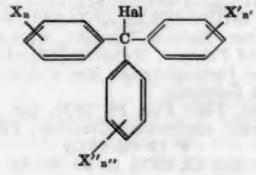
X, X′ and X″ are alkyl of 1 to 12 carbon atoms or an electro-negative moiety, and

n, n' and n'' are an integer from 0 to 2,

or pharmaceutically acceptable acid salts thereof may be produced by reacting a silver salt or alkali metal salt of an imidazole of the formula:



with a trityl halide of the formula:



wherein the substituents are as above defined and Hal is halogen. These compounds are useful an antimycotics.

3,711,499
N-TRITYL-IMIDAZOLES

Karl-Heinz Buchel, Leverkusen, Erik K. Regel, Wuppertal-Kronenberg, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

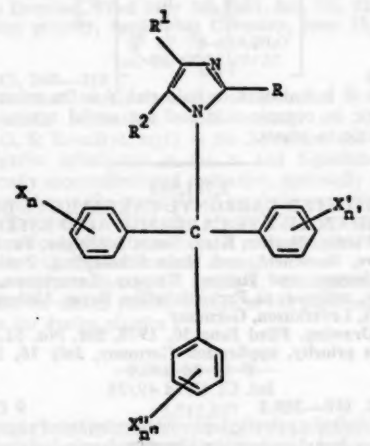
No Drawing. Application Feb. 24, 1970, Ser. No. 13,797, which is a division of application Ser. No. 758,594, Sept. 9, 1968, now Patent No. 3,660,577, dated May 2, 1972. Divided and this application Jan. 17, 1972, Ser. No. 218,523

Claims priority, application Germany, Sept. 15, 1967, F 53,504

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 3 Claims

N-trityl-imidazoles and salts thereof the formula:



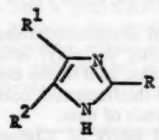
wherein

R, R^1 and R^2 are hydrogen, lower alkyl or phenyl, or R^1 and R^2 together form an anellated benzene ring,

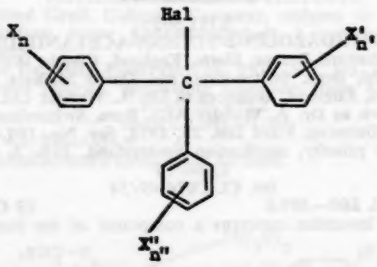
X, X′ and X″ are alkyl of 1 to 12 carbon atoms or an electro-negative moiety, and

n, *n*′ and *n*″ are an integer from 0 to 2,

or pharmaceutically acceptable acid salts thereof may be produced by reacting a silver salt or alkali metal salt of an imidazole of the formula:



with a trityl halide of the formula:



wherein the substituents are as above defined and Hal is halogen. These compounds are useful as antimycotics.

3,711,500
N-TRITYL-IMIDAZOLES

Karl-Heinz Buchel, Leverkusen, Erik K. Regel, Wuppertal-Kronenberg, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

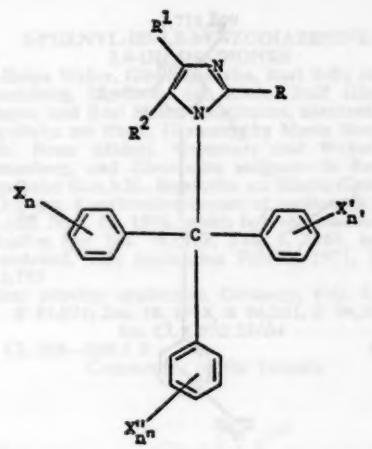
No Drawing. Application Feb. 24, 1970, Ser. No. 13,797, which is a division of application Ser. No. 758,594, Sept. 9, 1968, now Patent No. 3,660,577, dated May 2, 1972. Divided and this application Jan. 17, 1972, Ser. No. 218,525

Claims priority, application Germany, Sept. 15, 1967, F 53,504

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 3 Claims

N-trityl-imidazoles and salts thereof of the formula:



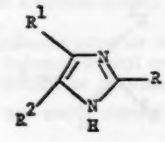
wherein

R, R^1 and R^2 are hydrogen, lower alkyl or phenyl, or R^1 and R^2 together form an anellated benzene ring,

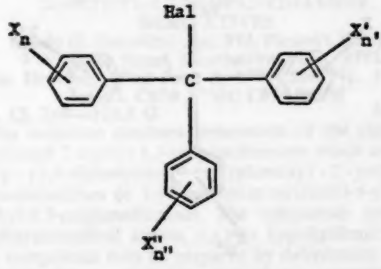
X, X′ and X″ are alkyl of 1 to 12 carbon atoms or an electro-negative moiety, and

n, *n*′ and *n*″ are in integer from 0 to 2,

or pharmaceutically acceptable acid salts thereof may be produced by reacting a silver salt or alkali metal salt of an imidazole of the formula:



with a trityl halide of the formula:



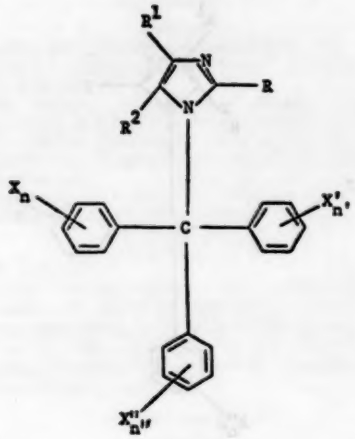
wherein the substituents are as above defined and Hal is halogen. These compounds are useful as antimycotics.

3,711,501
N-TRITYL-IMIDAZOLES

Karl-Heinz Buchel, Leverkusen, Erik K. Regel, Wuppertal-Kronenberg, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Application Feb. 24, 1970, Ser. No. 13,797, which is a division of application Ser. No. 758,594, Sept. 9, 1968, now Patent No. 3,660,577, dated May 2, 1972. Divided and this application Jan. 17, 1972, Ser. No. 218,526
Claims priority, application Germany, Sept. 15, 1967, F 53,504
Int. Cl. C07d 49/36
U.S. Cl. 260—309 8 Claims

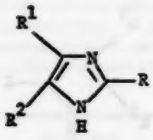
N-trityl-imidazoles and salts thereof of the formula:



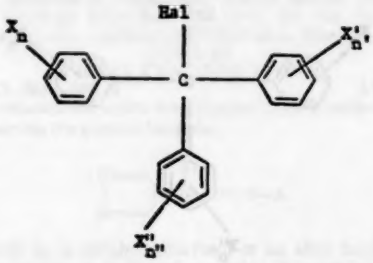
wherein

R, R^1 and R^2 are hydrogen, lower alkyl or phenyl, or R^1 and R^2 together form an anellated benzene ring,
X, X' and X'' are alkyl of 1 to 12 carbon atoms or an electro-negative moiety, and
n, *n'* and *n''* are an integer from 0 to 2,

or pharmaceutically acceptable acid salt thereof may be produced by reacting a silver salt or alkali metal salt of an imidazole of the formula:



with a trityl halide of the formula:



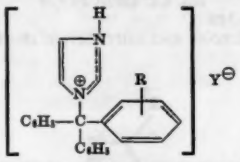
wherein the substituents are as above defined and Hal is halogen. These compounds are useful as antimycotics.

3,711,502
N-TRITYL-IMIDAZOLIUM SALT

Karl Heinz Buchel, Wuppertal-Elberfeld, Ferdinand Grewe, Burscheid, Hans Scheinpflug and Helmut Kaspers, Leverkusen, and Erik Regel, Wuppertal-Kronemberg, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Jan. 7, 1969, Ser. No. 789,602. Divided and this application May 15, 1970, Ser. No. 37,934
Int. Cl. C07d 49/36
U.S. Cl. 260—309 1 Claim

N-trityl-imidazolium salts of the formula:



wherein R is hydrogen or halo and Y is the anion of an inorganic or organic acid and are useful against fungi pathogenic to plants.

3,711,503
SUBSTITUTED CARBONYL-CARBAMIDYL-BENZIMIDAZOLE-2-YL-CARBAMIC ACID ESTERS

Arno Widdig, Blecher, Klaus Sasse, Schildgen, Ferdinand Grewe, Burscheid, and Hans Scheinpflug, Paul-Ernst Frohberger, and Helmut Kaspers, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 30, 1970, Ser. No. 51,381
Claims priority, application Germany, July 16, 1969, P 19 36 130.9
Int. Cl. C07d 49/38
U.S. Cl. 260—309.2 9 Claims

1-[N-(alkyl, cycloalkyl, phenyl or substituted phenyl)-S- or -O-carbonyl-carbamidyl]-benzimidazole-2-yl-carbamic acid alkyl esters, which possess fungicidal properties and which may be produced by conventional methods.

3,711,504
PROCESS FOR PREPARING ALKYL 2-BENZIMIDAZOLECARBAMATES

Charles D. Adams, Newark, and Joel B. Wommack, Jr., Claymont, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 6, 1970, Ser. No. 52,700
Int. Cl. C07d 49/38
U.S. Cl. 260—309.2 4 Claims

The alkyl esters of 2-benzimidazolecarbamic acid can be prepared by heating the alkyl esters of 4-(2-aminophenyl)-3-thioallophanic acid or the dialkyl esters of 4,4'-(1,2-phenylenebis)-3-thiallophanic acid with an alkylating agent in the presence of base.

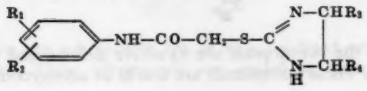
The product alkyl esters of 2-benzimidazolecarbamic acid are useful as fungicides and as intermediates for other fungicides.

3,711,505
2-(2-IMIDAZOLIN-2-YLTHIO)-ACETANILIDES

John Bernard Bream, Herts, England, Claude Wolfgang Picard, Bern, Switzerland, and David Michael Read, Herts, England, assignors to Dr. A. Wander Ltd. (also known as Dr. A. Wander AG), Bern, Switzerland

No Drawing. Filed Jan. 25, 1971, Ser. No. 109,630
Claims priority, application Switzerland, Feb. 3, 1970, 1,486/70
Int. Cl. C07d 49/34
U.S. Cl. 260—309.6 15 Claims

The invention concerns a compound of the formula:



wherein

R_1 and R_2 are each hydrogen, halogen or alkyl of 1 to 3 carbon atoms, and either each of R_3 and R_4 is hydrogen, or one of

R_3 and R_4 is alkyl of 1 to 3 carbon atoms or hydroxy and the other is hydrogen,

or a pharmaceutically acceptable acid addition salt thereof.

3,711,506

SUBSTITUTED 3-AMINOINDAZOLES

Klaus Wagner, Cologne-Buchheim, and Ernst Roos, Cologne-Flittard, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 26, 1969, Ser. No. 827,917
Claims priority, application Germany, June 15, 1968, P 17 70 649.9
Int. Cl. C07d *49/20*
U.S. Cl. 260—310 C **5 Claims**

Substituted 3-aminoindazoles are obtained by reacting benzonitrile derivatives which contain an XR-group (X=O, S; R=alkyl, aryl) in the 2-position and an electronegative substituent in the 3- and 5-positions, with optionally monosubstituted hydrazine, optionally in a solvent and/or in the presence of catalytic quantities of an acid. The radicals R in the group XR— are preferably alkyl radicals with from 1 to 4 carbon atoms and aryl radicals with up to 12 carbon atoms.

The compounds e.g. 3 - amino-5,7-dinitroindazole are suitable for use as yellow, orange or red pigments for example for dyeing plastics.

3,711,507

1-[p-(2-AMINOETHYL)-PHENYL]-PYRROLES

Franz Ostermayer and Ulrich Renner, Riehen, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Oct. 14, 1970, Ser. No. 80,783
Claims priority, application Switzerland, Oct. 17, 1969, 15,545/69
Int. Cl. C07d *27/24*
U.S. Cl. 260—326.9 **7 Claims**

Compounds of the class of 1-[p-(2-aminoethyl)-phenyl]-pyrrole and the pharmaceutically acceptable acid addition salts thereof have analgesic, antiphlogistic and antipyretic effects; pharmaceutical compositions comprising these compounds and a pharmaceutical carrier are provided as well as methods for producing analgesic, antiphlogistic and antipyretic effects comprising administering them; a typical embodiment is 1-[4-(2-aminoethyl)-2-chlorphenyl]-pyrrole.

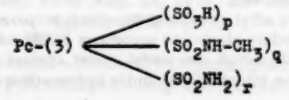
3,711,508

PHTHALOCYANINE DYESTUFFS

Manfred Groll, Cologne, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 28, 1970, Ser. No. 41,646
Claims priority, application Germany, June 6, 1969, P 19 28 677.2
Int. Cl. C09b *47/04*
U.S. Cl. 260—314.5 **1 Claim**

Phthalocyanine dyestuffs of formula



wherein

Pc denotes the residue of a copper or nickel phthalocyanine,

p denotes a number from 1.0 to 1.9,

q denotes a number from 0.9 to 1.2 and

r is a number from 0.5 to 1.0,

with *p*, *q* and *r* representing statistical average values, the sum of which is 2.9 to 3.3

and their use for dyeing and printing of cellulose containing materials.

The new dyestuffs are distinguished by excellent solubility in water and very good affinity for cotton and especially for viscose rayon.

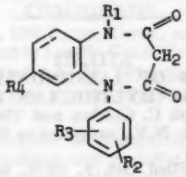
3,711,509

5-PHENYL-1H-1,5-BENZODIAZEPINE-2,4-(3H,5H)-DIONES

Karl-Heinz Weber, Gau-Algesheim, Karl Zeile and Peter Danneberg, Ingelheim am Rhein, Rolf Giesemann, Bingen, and Karl Heinz Hauptmann, deceased, late of Ingelheim am Rhein, Germany, by Maria Hauptmann, heir, Bonn (Rhine), Germany; said Weber, Zeile, Danneberg, and Giesemann assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

No Drawing. Continuation-in-part of application Ser. No. 89,482, Nov. 13, 1970, which is a continuation of application Ser. No. 703,188, Feb. 5, 1968, both now abandoned. This application Feb. 1, 1971, Ser. No. 111,715
Claims priority, application Germany, Feb. 7, 1967, B 91,071; Jan. 18, 1968, B 96,281, B 96,282
Int. Cl. C07d *53/04*
U.S. Cl. 260—239.3 B **8 Claims**

Compounds of the formula



wherein

R_1 is hydrogen, straight or branched alkyl of 1 to 5 carbon atoms, hydroxy-alkyl of 2 to 4 carbon atoms or di(alkyl of 1 to 4 carbon atoms) aminoalkyl of 2 to 4 carbon atoms,

R_2 is halogen, trifluoromethyl or methoxy,

R_3 is hydrogen, halogen, methyl or ethyl, and

R_4 is hydrogen, fluorine or chlorine;

the compounds are useful aspsychosedatives and anticonvulsives.

3,711,510

2-METHYL-1,3-PROPANEDIAMINE DERIVATIVES

Mario G. Buzzolini, Apt. 91J, Parson's Village, 3 W. South Street, Morristown, N.J. 07924

No Drawing. Filed June 2, 1970, Ser. No. 42,897
Int. Cl. C07d *27/04*; C07c *93/06*
U.S. Cl. 260—326.5 G **9 Claims**

The invention discloses compounds of the class of 2-substituted 2-methyl-1,3-propanediamines which are either 2 - [p - (3,5-diphenylcyclohexyl)phenoxy] - 2 - methyl-1,3-propanediamines or 2-(5'-phenyl-m-terphenyl-4-yloxy)-2-methyl-1,3-propanediamines. The compounds are useful as pharmaceutical agents, e.g., as hypolipidemic agents. The compounds may be prepared by dehydration and dehydrogenation or hydrogenation of corresponding compounds which are 3,5-diphenyl-cyclohexan-1-ols or 3,5-diphenyl-2-cyclohexen-1-ols.

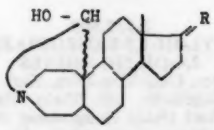
3,711,511

3-AZA - 19 - HYDROXY-3,19-CYCLO-A-HOMO-STEROIDS AND PROCESS FOR THEIR MANUFACTURE

Oskar Jeger, Zollikerberg, and Ueli Wehrli, Schaffhausen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Sept. 19, 1969, Ser. No. 859,582
Claims priority, application Switzerland, Sept. 27, 1968, 14,491/68
Int. Cl. C07d *41/08*
U.S. Cl. 260—326.5 B 13 Claims

The invention relates to new 3-aza-19-hydroxy-3,19-cyclo-A-homo-steroids, especially those corresponding to the formula



wherein R=a free or ketalized oxo group or
a β-positioned free, esterified or etherified hydroxyl group together with an α-positioned hydrogen atom, a lower alkyl, alkenyl or alkinyl group, or
α-positioned free, esterified or etherified hydroxyl group together with an acetyl or hydroxyacetyl group or the 1',5'-dimethylhexyl group together with an α-positioned hydrogen atom;

Use a strong local anaesthetic.

And a process of preparing the new compounds.

3,711,512

PREPARATION OF 1-(AMINOALKYLAMINO)-4-HYDROXYMETHYLTHIOXANTHEN-9-ONES

David Rosi, Joseph C. Collins, and Theodore C. Miller, East Greenbush, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed Oct. 5, 1970, Ser. No. 78,222
Int. Cl. A61k *27/00*; C07d *65/18*
U.S. Cl. 260—328 4 Claims

A process for the preparation of 1-[R_1R_2N—Y—N(R)]-4-hydroxymethylthioxanthen-9 - one, schistosomacidal agents, which comprises reacting 1-[R_1R_2N—Y—N(R)]thioxanthen-9-one with excess formaldehyde at an acidic pH where R is hydrogen or methyl, R_1 and R_2 are each lower-alkyl, and Y is lower-alkylene having from two to four carbon atoms and having its two connecting linkages on different carbon atoms.

3,711,513

1-CHLOROTHIOXANTHEN-9-ONE PREPARATION FROM 2,6-DICHLOROBENZONITRILE

John W. Schulenberg, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed Oct. 5, 1970, Ser. No. 78,220
Int. Cl. A61k *27/00*; C07d *65/18*
U.S. Cl. 260—328 2 Claims

A process for the preparation of 1-chlorothioxanthen-9-one, an intermediate in the preparation of schistosomacidal agents, e.g., hycanthone, which comprises reacting 2,6-dichlorobenzonitrile with an alkali metal thiophenoxide to yield 2-chloro-6-phenylthiobenzonitrile, heating said benzonitrile with polyphosphoric acid to produce 1-chloro-9-iminothioxanthene and hydrolyzing said 9-imino compound to produce 1-chlorothioxanthen-9-one.

3,711,514

HIGHLY FLUORINATED ALKYL ESTERS OF TRIMELLITIC ACID ANHYDRIDE AND METHOD FOR THEIR PRODUCTION

James E. Quick, Pittsburgh, Pa., assignor to the United States of America as represented by the Secretary of the Navy

Filed Feb. 12, 1970, Ser. No. 10,942
Int. Cl. C07c *63/32*
U.S. Cl. 260—346.3 6 Claims

Highly fluorinated ester-anhydrides and diacids are formed by reacting an acid anhydride chloride or a diacid with a perfluorinated aliphatic alcohol. The fluorinated esters will cure epoxy resins and form plastics which exhibit a low degree of wettability, a low degree of surface friction, and a low degree of water absorption. The fluoroester-cured epoxy resin plastics are useful in sonar dome and hydrofoil coatings, molded plastic articles, fuel tank linings, and aircraft adhesives.

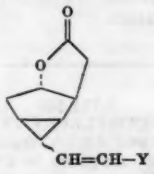
3,711,515

TRICYCLIC LACTONE ALKENE OR ALKENYNE

Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 93,483, Nov. 27, 1970. This application Sept. 16, 1971, Ser. No. 181,246
Int. Cl. C07d *5/32*
U.S. Cl. 260—343.3 6 Claims

Tricyclic lactone alkenes or alkenynes of the formula:



wherein Y is 1-pentyl or 1-pentyl-2-ynyl, and ~ indicates attachment of the moiety to the cyclopropane ring in exo or endo configuration are useful as intermediates in preparing prostaglandins having pharmaceutical utility.

3,711,516

ALIPHATIC ETHERS AND THIO COMPOUNDS

John B. Siddall, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Filed Feb. 25, 1970, Ser. No. 14,217
Int. Cl. C07d *13/10*
U.S. Cl. 260—340.5 6 Claims

Aliphatic hydrocarbon alcohols, ethers, thioethers, sulfinyl and sulfonyl compounds having terminal tertiary alkyl group useful in insect control, perfumery, plastics and as intermediates.

3,711,517

QUATERNARY ALKYL ETHERS OF MECHYLENEDISXYPHENYL COMPOUNDS

John B. Siddall, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 854,578, Sept. 2, 1969, Pat. No. 3,649,590. This application March 5, 1970, Ser. No. 16,936
Int. Cl. C07d *13/08*
U.S. Cl. 260—340.5 8 Claims

Quaternary alkyl ethers and thioethers prepared by conversion of secondary alcohol to secondary halide and etherification of halide which are useful insect control agents, perfumery agents, intermediates and in hydrocarbon polymers.

3,711,518

CHEMICAL COMPOUNDS AND METHODS OF PREPARING THE SAME

Marcia E. Christy, Perkasie, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application Jan. 29, 1968, Ser. No. 723,964, now Patent No. 3,576,823. Divided and this application June 22, 1970, Ser. No. 48,455

Int. Cl. C07d *21/00*

U.S. Cl. 260—340.5 10 Claims

The disclosure describes derivatives of dibenzocycloheptenes useful because of their antidepressant activity. The disclosure also describes a method for preparing these compounds from the known 3α,12β-dihydro-2,2-dimethyl-5H-dibenzo[3,4:6,7]cyclohepta[1,2-d]-1,3-dioxol - 8 - one and derivatives thereof which contain additional substituents substituted in any position of the benzenoid ring. This starting material, alternatively known as the acetonide of 10,11-dihydroxy-10,11-dihydro - 5H - dibenzo-[a,d]-cyclohepten-5-one is converted by treatment with a 3-dialkylaminopropyl magnesium halide to produce the corresponding 5-hydroxy-5-(3-dialkylaminopropyl) compound which is then dehydrated under acidic conditions to produce the acetonide of 10,11-dihydroxy-10,11-dihydro-5-(3-dialkylaminopropylidene) - 5H - dibenzo[a,d] cycloheptene. This product is hydrolyzed to produce the corresponding 10,11 - dihydroxy-5-(3-alkylaminopropylidene)-5H-dibenzo[a,d]cycloheptene.

3,711,519

PHENYL ETHERS

Ladislav Dolejs, Kitka Kahovcova, Karel Slama, and Frantisek Sorm, Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

No Drawing. Filed Jan. 22, 1971, Ser. No. 109,024

Claims priority, application Czechoslovakia, Jan. 29, 1970, 652/70

Int. Cl. C07d *1/18*

U.S. Cl. 260—348 R 4 Claims

Novel phenyl ethers, preparation thereof and their use for insect control.

3,711,520

FLAME RETARDANT COMPOSITIONS

Charles W. Pfeifer, Schenectady, N.Y., and William J. Bobear, Latham, both of N.Y., assignors to General Electric Company

Filed Sept. 4, 1970, Ser. No. 69,982

Int. Cl. C08g *51/04*

U.S. Cl. 260—375 B 11 Claims

A silicone elastomer stock which exhibits improved flame resistance in the cured state consists essentially of a silicone elastomer, a filler, a small amount of a flame retardant material selected from the group consisting of platinum and platinum compounds and a Group II metal oxide.

3,711,521

17α-HYDROXY AND ACYLOXY SUBSTITUTED-9α-METHYL-19-NORPROGESTERONES

Robert V. Coombs, Summit, and Eugene E. Galantay, Morristown, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Aug. 10, 1970, Ser. No. 62,663

Int. Cl. C07c *169/32*

U.S. Cl. 260—397.3 5 Claims

17α - substituted - 9α-methyl-19-norprogesterones, e.g., 17α - acetoxy-9α-methyl-19-norpregn-4-en-3,20-dione, are prepared from 3-alkoxy-17-ethylidene-9α-methylestra-1,3,5(10)-trienes and are useful as progestational agents.

3,711,522

DIHALO STEROIDS

Perry Rosen, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Mar. 24, 1971, Ser. No. 127,767

Int. Cl. C07c *169/20*

U.S. Cl. 260—397.4 26 Claims

6,7 - dihalo-Δ^5-steroids and 6-fluoro-6-halo-5,7-cyclo steroids which are useful as progestational agents and a process for preparing these steroids from Δ^5-steroids including intermediates in this process.

3,711,523

OXIDATION OF VICINAL GLYCOLS IN THE PRESENCE OF ORGANIC PEROXIDES AND COBALTOUS COMPOUNDS

Edmund P. Pultinas, Jr., Cincinnati, and Robert D. Temple, North College Hill, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Sept. 4, 1970, Ser. No. 69,912

Int. Cl. C07c *51/26, 55/02, 53/22*

U.S. Cl. 260—413 11 Claims

Process for preparing carboxylic acids which comprises reacting vicinal glycols with oxygen in the presence of a mixture of organic peroxides and cobalt compounds.

3,711,524

PROCESS FOR PREPARING DIALKYLTIN COMPOUNDS

John R. Leebrick, Old Lyme, Conn., assignor of a fractional part interest to Lucille Coon, Cedar Grove, N.J.

No Drawing. Filed July 28, 1971, Ser. No. 167,026

Int. Cl. C07f *7/22*

U.S. Cl. 260—429.7 13 Claims

Dialkyltin compounds are prepared by the reaction of lower dialkyl sulfates and metallic tin. The product can be hydrolyzed to give the corresponding dialkyltin oxide.

3,711,525

STABILIZED IRON CHELATES AND PLANT TREATING AGENTS CONTAINING THE SAME

Claude Hennart, 86 Rue Sadi Carnot, F–93 Aubervilliers, France

No Drawing. Filed Nov. 25, 1970, Ser. No. 92,885

Int. Cl. C07f *15/02*

U.S. Cl. 260—439 R 9 Claims

Solid or liquid compositions containing an iron chelate of the ethylenediamino-tetraacetic acid complex type and a 2-hydroxy-benzophenone as stabilizer. These compositions are employed for the treatment of plants.

3,711,526

VAPOR PHASE PROCESS FOR PREPARING AROMATIC ISOTHIOCYANATES

Richard H. Martin, Brevard, N.C., assignor to Olin Corp.

Filed June 30, 1970, Ser. No. 51,339

Int. Cl. C07c *161/04*

U.S. Cl. 260—454 10 Claims

A continuous vapor phase process for preparing aromatic isothiocyanates comprising reacting vaporized aromatic nitro compound with a gaseous sulfur-containing carbon compound in the presence of an alkali metal hydrosulfide.

3,711,527
PROCESS FOR THE PRODUCTION OF 3,4-UNSATURATED NITRILES

Peter Kurtz, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 5, 1970, Ser. No. 9,033
Claims priority, application Germany, Feb. 10, 1969, P 19 06 493.8; Dec. 2, 1969, P 19 60 380.6, P 19 60 381.7
Int. Cl. C07c *121/20, 121/48, 121/52*
U.S. Cl. 260—465.8 14 Claims

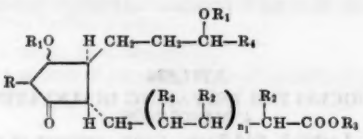
Process for the production of 3,4-unsaturated nitriles together with carboxylic acids by reaction of allyl esters with hydrocyanic acid in the presence of a catalyst based on copper-I-halide at a temperature from 20 to 200° C., the reaction being carried out either in the gaseous phase or liquid phase.

3,711,528
RACEMIC DIHYDRO-PGE AND RELATED COMPOUNDS

Philip F. Beal, III; Frank H. Lincoln, Jr., and John C. Babcock, all of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 541,477, April 11, 1966, Pat. No. 3,505,387. This application April 6, 1970, Ser. No. 31,062
Int. Cl. C07c *61/36, 69/74*
U.S. Cl. 260—468 D 3 Claims

1. A racemic compound of the formula



wherein

R is selected from the group consisting of hydrogen and methyl,

R_1 is selected from the group consisting of hydrogen and the acyl radical of a hydrocarbon carboxylic acid containing one to 12 carbon atoms, inclusive,

R_2 is selected from the group consisting of hydrogen and methyl, with the proviso that not more than one R_2 can be methyl in a given side chain,

R_3 is selected from the group consisting of hydrogen and an alkyl radical containing from one to 12 carbon atoms, inclusive,

R_4 is an alkyl radical containing one to eight carbons, inclusive,

n_1 is an integer selected from the group consisting of 0 and 1,

and when R_3 is hydrogen the pharmacologically acceptable salts thereof.

3,711,529
COMPLEXES OF ALUMINUM ALKYLS AND SODIUM FLUORIDE

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,257
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 A 7 Claims

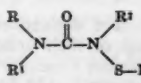
It is disclosed that alkyl aluminum and alkali metal halides form stable 2:1 complexes wherein the alkyl groups of the alkyl aluminum have from about 6 to about 20 carbon atoms each. Processes are disclosed whereby the compositions of the present invention are produced. Similar 2:1 complexes of such alkyl aluminum and other complexing agents are disclosed.

3,711,530
N-SUBSTITUTED-N-CHLOROCYCLOALKYLTHIO UREA

John W. Kobzina, Berkeley, Joseph F. Moore, Richmond, and Gustave K. Kohn, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

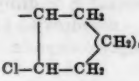
No Drawing. Filed July 14, 1970, Ser. No. 54,855
Int. Cl. C07c *119/00*
U.S. Cl. 260—453 R 7 Claims

Compound of the formula



wherein R and R^1 are hydrogen, alkyl of 1 to 12 carbon atoms substituted with 0 to 4 halogen atoms of atomic number 9 to 35, cycloalkyl of 3 to 12 carbon atoms substituted with 0 to 4 halogen atoms of atomic number 9 to 35, aryl of 6 to 12 carbon atoms substituted with 0 to 4 halogen atoms of atomic number 9 to 35, nitro groups or alkoxy groups of 1 to 16 carbon atoms; R^3 is alkyl of 1 to 10 carbon atoms substituted with 0 to 4 halogen atoms of atomic number 17 to 35, cycloalkyl of 5 to 10 carbon atoms substituted with 0 to 4 halogen atoms of atomic number 17 to 35; and R^3 is either

(a)



wherein *n* is an integer of from 1 to 8, or

(b) monochloronorbornyl.

The compounds are herbicides.

3,711,531
TELOMERS OF VINYL ESTERS AND ACETONITRILE

Joseph K. Hoffman, Oldwick, and James P. Russell, Berkeley Heights, N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Original application July 31, 1964, Ser. No. 386,593. Divided and this application Dec. 22, 1969, Ser. No. 887,021
Int. Cl. C07c *121/20, 121/28, 121/38*
U.S. Cl. 260—465.4 4 Claims

Telomers of vinyl esters of lower alkanoic acids, such as vinyl acetate, wherein the telogen is acetonitrile, are produced by reacting the vinyl ester with the telogen at a temperature of 90° to 250° C. and at a pressure of 50 to 7500 p.s.i. in the presence of a free-radical-forming catalyst or initiator effective for the polymerization of vinyl acetate, the vinyl ester and the telogen having a residence time in the reaction of 0.5 to 60 minutes, preferably 1 to 10 minutes.

3,711,532
PREPARATION OF BETA-HALOGENO-PROPIONITRILES

Colin Hewlett, Midland Park, and Charles N. Winnick, Teaneck, N.J., assignors to Halcon International, Inc.

No Drawing. Filed Oct. 20, 1969, Ser. No. 867,898
Int. Cl. C07c *21/16*
U.S. Cl. 260—465.7 14 Claims

Beta-halogenopropionitriles and their alpha-alkyl derivatives are prepared by reacting aqueous solutions of a hydrogen halide and the nitrile with the continuous removal of water from the reaction zone. The reaction may also be carried out in the presence of an inert solvent with water removed from the reaction zone by distillation as the azeotrope with the nitrile and/or inert solvent.

3,711,533

DIALKYLAMINOALKYL ESTERS OF 6-CHLORO-1,2,3,4 - TETRAHYDRO - 1 - NAPHTHALENE-ACETIC ACID AND Δ^1 ANALOGS

Robert W. Hamilton, Wilmette, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 860,050, Sept. 22, 1969, now Patent No. 3,668,251. This application Aug. 9, 1971, Ser. No. 170,362

Int. Cl. C07c *93/20*

U.S. Cl. 260—469 7 Claims

Preparation of the captioned compounds—for example, 6-chloro-N-(2-diethylaminoethyl) - 1,2,3,4 - tetrahydro - 1 - naphthaleneacetamide, 2-dimethylaminoethyl 6 - chloro-1,2,3,4-tetrahydro-1-naphthaleneacetate hydrochloride, etc—and their valuable biological properties—including antiulcerogenic, antibiotic, and antiinflammatory activities—are disclosed.

3,711,534

SYNTHESIS OF OCTADIENYL ESTERS

Robert M. Manyik, St. Albans, and Wellington E. Walker, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Sept. 4, 1968, Ser. No. 757,485

Int. Cl. C07c *69/54, 69/80*

U.S. Cl. 260—475 N 23 Claims

Octadienyl esters are prepared by reacting butadiene with carboxylic acids in the presence of palladium catalysts, preferably complexed with phosphite or phosphine ligands, and tertiary amines having a basicity constant K_b greater than 10^{-7} as reaction modifiers. The tertiary amines also assist in the separation of the products.

3,711,535

PROCESS FOR RECOVERING ALUMINUM ALKYLS OF SELECTED MOLECULAR WEIGHT USING COMPLEXES

Paul Kobetz and Kenneth L. Lindsay, Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Sept. 25, 1970, Ser. No. 75,702

Int. Cl. C07f *5/06*

U.S. Cl. 260—448 A 35 Claims

It is disclosed that exchange reactions occur with certain 2:1 complexes of aluminum trialkyls and various complexing agents such as sodium fluoride and sodium cyanide. Complexes containing one mol of lower alkyl trialkyl aluminum and one mol of different higher alkyl trialkyl aluminum per mol of complexing agent are formed from complexes containing two mols of lower alkyl trialkyl aluminum per mol of complexing agent. The reactions are useful in producing aluminum trialkyls and olefins of selected or "peaked" molecular weights without requiring complicated and expensive distillation equipment. Various complexes produced are novel and useful as intermediates in various reactions.

3,711,536

o-(α-HYDROXYALKYL)PHENYL N-METHYL CARBAMATES

Gustav K. Kohn, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

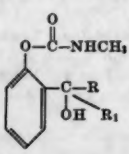
No Drawing. Filed Mar. 24, 1971, Ser. No. 127,779

The portion of the term of the patent subsequent to July 25, 1989, has been disclaimed

Int. Cl. C07c *125/06*

U.S. Cl. 260—479 C 3 Claims

o-(α-Hydroxyalkyl)phenyl N-methyl carbamates of the formula



wherein R is hydrogen or methyl and R_1 is ethyl or propyl, with the proviso that the total number of carbon atoms for R and R_1 taken together is 3. The above carbamates find use as insecticides.

3,711,537

PROCESS FOR THE PREPARATION OF TRANS 4-AMINOMETHYLCYCLOHEXANE-1-CARBOXYLIC ACID

Kiro Asano, 2-23, Azabujyuban, Minato-ku, Tokyo; Hitoshi Takita, No. 3897, Kamitsuruma, Sagamihara-shi, Kanagawa; Noriyuki Toyotia, No. 3-10-12, Nerima; Masaaki Takahashi, No. 1-8, Toyotamakita, both of Nerima-ku, Tokyo, and Shigeyuki Suzuki, No. 1-2-10, Igusa-cho, Suginami-ku, Tokyo, all of Japan

Filed July 31, 1970, Ser. No. 60,138

Claims priority, application Japan, July 31, 1969, 44/59965

Int. Cl. C07c *101/04, 103/52*

U.S. Cl. 260—514 J 8 Claims

A process for preparing the trans isomer of 4-aminomethylcyclohexane-1-carboxylic acid easily and in a good yield, is disclosed. The process comprises hydrolyzing in the presence of an acid or an alkali a polymer prepared by polymerization of the cis isomer of 4-aminomethylcyclohexane-1-carboxylic acid, a mixture of the cis isomer and the trans isomer of the carboxylic acid, or further 3-azabicyclo [3,2,2]-nonanone-2 or a mixture of the nonanone and the cis isomer or the trans isomer or a mixture thereof, under suitable conditions and then treating the product obtained with an ion exchange resin.

3,711,538

DELTA 2,ALPHA-ADAMANTANEACETANILIDE DERIVATIVES AND RELATED COMPOUNDS

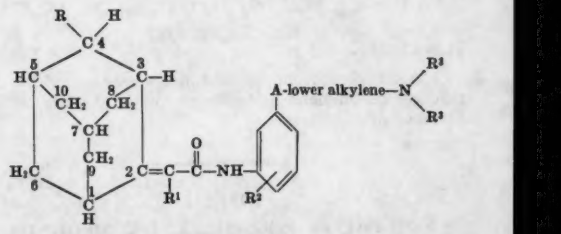
Venkatachala Lakshmi Narayanan, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Znc., New York, N.Y.

Continuation-in-part of Ser. No. 32,768, April 28, 1970, abandoned, which is a continuation-in-part of Ser. No. 725,892, May 1, 1968, abandoned. This application Jan. 11, 1971, Ser. No. 105,711

Int. Cl. C07c *103/78*

U.S. Cl. 260—557 B 11 Claims

This invention relates to new Δ^2,α-adamantaneacetanilide derivatives and related compounds of the formula



and acid addition salts thereof, substances useful in cardiovascular disorders and serotonin inhibition.

3,711,539

NONSOLVENT AIR OXIDATION OF p-XYLENE

Theodore A. Koch, Holly Oak, and Herbert S. Eleuterio, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Sept. 3, 1968, Ser. No. 757,157

Int. Cl. C07c *51/42, 63/02*

U.S. Cl. 260—524 R 9 Claims

Making terephthalic acid by oxidizing p-xylene, at 160° to 220° C., without solvent, under pressure sufficient to

maintain oxidizable material in a liquid phase, agitating the mixture and during oxidation removing from the reaction mixture water formed therein and obtaining an oxidate-containing terephthalic acid and intermediate oxidation products that is washed with a single ring aromatic hydrocarbon, e.g., p-xylene, at 250° to 350° C. to remove hydrocarbon soluble intermediate oxidation products and recovering solid terephthalic acid.

3,711,540

PRODUCTION OF ACRYLIC ACID BY OXIDATION OF ACROLEIN

Helmut Nonnenmacher, deceased, late of Limburgerhof, Pfalz, Germany, by Ruth S. H. Nonnenmacher, heiress-in-law, and representative of minor heirs, Limburgerhof, Pfalz, Richard Krabetz, Kirchheim, Weinstrasse, Heinz Engelbach, Limburgerhof, Pfalz, and Helmut Zinke-Allmang, Bad Duerkheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed Apr. 5, 1968, Ser. No. 719,830

Int. Cl. C07c *51/32, 57/04*

U.S. Cl. 260—530 **5 Claims**

An improved process for the production of acrylic acid by contacting acrolein with gases containing molecular oxygen in the gas phase at temperatures of 220° to 450° C. in the presence of catalyst which in addition to oxygen, molybdenum and tungsten contain iron and/or nickel and/or manganese and/or copper, wherein the improvement comprises using catalysts which contain molybdenum, tungsten and iron and/or nickel and/or manganese and/or copper in the atomic ratio from 1:0.01:1 to 20:10:1. Acrylic acid produced according to the process may be used as such or after having been esterified with alkanols for the production of polymers.

3,711,541

PREPARATION OF PHOSPHONYL DIHALIDES

Nathan D. Field, Allentown, and David I. Randall and Calvin Vogel, Easton, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed July 14, 1969, Ser. No. 841,574

Int. Cl. C07f *9/42*

U.S. Cl. 260—543 P **9 Claims**

2-haloethyl phosphonyl dihalides are prepared by the reaction of ethylene and phosphorus oxyhalides in the presence of a catalyst.

3,711,542

N-METHYLOL PHOSPHAZENE COMPOUNDS

Edwin O. Hook, Marshfield, George R. Berbeco, Chestnut Hill, and Arthur S. Obermayer, West Newton, Mass., assignors to Moleculon Research Corporation, Cambridge, Mass.

No Drawing. Filed Dec. 18, 1969, Ser. No. 886,329

Int. Cl. C07d *105/02*

U.S. Cl. 260—551 P **8 Claims**

Phosphazene compounds containing N-methylol groups are prepared by reacting an amino phosphazene compound with formaldehyde in the presence of a base to provide a water-soluble N-methylol phosphazene compound. In particular, ansa and spiro-type ring N-methylol phosphazene compounds are prepared by reacting phosphonitrilic chloride with a C_2–C_3 alkylene diamine or ammonia plus glyoxal and reacting either product with formaldehyde in the presence of a base to form the N-methylol ring compound. The N-methylol phosphazene compounds are employed as fabric flame retardants and crease-proof monomers in condensation reactions with cellulosic-type fabrics.

3,711,543

CERTAIN BENZYLHYDRAZINO DERIVATIVES OF LOWER-ALKYL SUBSTITUTED UREAS

Werner Bollag, Basel; Hugo Gutmann, Reinach/Baseland; Balthasar Hegedus, Binningen; Ado Kaiser, Neufrenkendorf; Albert Langemann, Binningen; Marcel Muller, Frenkendorf, and Paul Zeller, Allschwil, all of Switzerland, assignors to Hoffmann-LaRoche Inc., Nutley, N.J.

Division of Ser. No. 571,690, Aug. 11, 1966, Pat. No. 3,534,100, which is a division of Ser. No. 200,059, June 5, 1962,. This application June 4, 1970, Ser. No. 43,572

Claims priority, application Switzerland, June 9, 1961, 6734/61

Int. Cl. c07c *127/16*

U.S. Cl. 260—553 A **5 Claims**

Benzene-ring substituted (2-methylhydrazino)-methylbenzene compounds and intermediates therefore are described. The former compounds are useful as cytostatic agents and, particularly, inhibit the growth of transplantable tumors in both mice and rats. Thus, they are active, for example, against Walker tumors, Ehrlich carcinoma and Ehrlich ascites carcinoma.

3,711,544

HEAT RECOVERY IN UREA SYNTHESIS

Robert N. Summerville, Cranford, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed April 20, 1970, Ser. No. 30,131

Int. Cl. C07c *127/04*

U.S. Cl. 260—555 A **9 Claims**

Heat recovery in a urea synthesis in which heat generated during the urea synthesis is employed for providing steam which is used for removing dissolved gases from a urea solution.

3,711,545

ALPHA-AMINOALKYL-4-HYDROXY-3-SULFAMOYLAMINOBENZYL ALCOHOLS

Carl Kaiser, Haddon Heights, N.J., and Stephen T. Ross, Berwyn, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed Feb. 23, 1971, Ser. No. 118,156

Int. Cl. C07c *143/72*

U.S. Cl. 260—556 N **12 Claims**

α-Aminoalkyl-4-hydroxy-3-sulfamoylaminobenzyl alcohols having β-adrenergic stimulant activity, particularly as selective bronchodilators, are prepared generally from 3-amino-4-benzyloxyphenones by, for example, reaction with a sulfamoyl chloride to give 3-sulfamoylaminophenones, bromination of these phenones and treatment of the resulting α-bromo derivatives with an N-benzyl secondary amine, followed by catalytic hydrogenation to remove the benzyl groups and reduce the ketone moiety.

3,711,546

N-(ORTHO-SUBSTITUTED BENZENE OR NAPHTHALENE CARBOXAMIDOETHYLE)PARA-PHENYLENE DIAMINES AS COUPLER-DEVELOPERS

Myron S. Simon, 25 David Road, Newton Centre, Mass.

Division of Ser. No. 598,870, Dec. 2, 1966, Pat. No. 3,537,850. This application June 9, 1969, Ser. No. 847,768

Int. Cl. C07c *103/26*

U.S. Cl. 260—559 S **3 Claims**

Novel coupler developers for preparing color transfer

images. Essentially the coupler developers contain a coupling moiety linked to a silver halide developing moiety.

3,711,547

DIHALOCYCLOPROPYL SUBSTITUTED ALIPHATIC AMINES

John B. Siddall, 975 California Ave., Palo Alto, Calif., and Jean Pierre Calamie, Villa Laperla, 6605 Locarno, Switzerland

Division of Ser. No. 841,559, July 14, 1969, abandoned, which is a continuation-in-part of Ser. No. 800,267, Feb. 18, 1969, abandoned, which is a continuation-in-part of Ser. No. 618,321, Feb. 24, 1967, abandoned. This application April 27, 1970, Ser. No. 43,260

Int. Cl. C07c *87/24*

U.S. Cl. 260—563 R 9 Claims

3,7,11-Trialkyl aliphatic amines having a chain length of 12 to 17 carbons substituted at position C-2,3, C-6,7 and/or C-10,11 with a dihalocyclopropyl group which are useful for the control of insects.

3,711,548

CYCLOPROPYL SUBSTITUTED ALIPHATIC AMINES

John B. Siddall, 975 California Avenue, Palo Alto, Calif., and Jean Pierre Calame, Villa LaPerla, 6605 Locarno, Switzerland

Division of Ser. No. 841,559, July 14, 1969, abandoned, which is a continuation-in-part of Ser. No. 800,267, Feb. 18, 1969, abandoned, which is a continuation-in-part of Ser. No. 618,321, Feb. 24, 1967, abandoned. This application July 20, 1970, Ser. No. 63,963

Int. Cl. C07c *87/24*

U.S. Cl. 260—563 R 8 Claims

3,7,11-Trialkyl aliphatic amines having a chain length of 12 to 17 carbons substituted at positions C-2,3, C-6,7 and/or C-10,11 with cyclopropyl group which are useful for the control of insects.

3,711,549

PROCESS FOR MANUFACTURING CYCLOPROPYLAMINE

Lee V. Phillips and Roger P. Cahoy, Overland Park, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Continuation-in-part of application Ser. No. 756,288, Aug. 29, 1968. This application May 19, 1970, Ser. No. 38,878

Int. Cl. C07c *85/02*

U.S. Cl. 260—563 R 1 Claim

In a procedure for manufacturing cyclopropylamine beginning with ring closure of a lower alkyl 4-chlorobutyrate followed by amidation of the corresponding cyclopropanecarboxylate so produced and conversion of the amide to the amine by means of the Hofmann reaction, maximum yields of useful product are obtained by conducting the amidation by ammoniation in non-reactive organic liquid medium in the presence of an alkali metal alkoxide and after adding water to the amidation product, separating and recycling the organic liquid phase to the ring closure step; by acidification and use of the unpurified aqueous amidation product solution in the Hofmann reaction, in which the acidified aqueous solution of the amide is first added to a solution of alkali metal hypochlorite, then alkali metal hydroxide is added and the temperature is raised to convert the intermediate product to the amine, and finally recovering cyclopropylamine in the form of an aqueous solution by steam distillation.

3,711,550

ISOMERIZATION OF 4,4'-METHYLENEDI (CYCLOHEXYLAMINE) OVER MODERATED RUTHENIUM CATALYST

Loren D. Brake, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 691,984, Dec. 20, 1967, which is a continuation-in-part of applications Ser. No. 516,107, Dec. 23, 1965, and Ser. No. 587,979, Oct. 20, 1966, all now abandoned. This application Feb. 16, 1970, Ser. No. 11,830

Int. Cl. C07c *87/32*

U.S. Cl. 260—563 B 8 Claims

A mixture of the stereoisomers of 4,4'-methylene-di-(cyclohexylamine) not at equilibrium is converted to a mixture of stereoisomers approaching equilibrium ratio by heating the mixture of stereoisomers in the absence of added ammonia to a temperature of from 150° to 300° C. in the presence of hydrogen at a partial pressure of from 50 to 5500 pounds per square inch and at a total pressure of from 500 to 15,000 pounds per square inch in the presence of from 0.001 to 10 weight percent of a ruthenium catalyst, calculated as ruthenium metal and based on the starting weight of mixed isomers, the ruthenium being supported on an inert carrier and having been alkali moderated with from 0.1 to 15 weight percent of a basic alkali metal compound calculated as the alkali metal.

3,711,551

PROCESS OF PRODUCING ORTHO-AMINOPHENOL

Matthew A. McMahon, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed July 15, 1970, Ser. No. 55,263

Int. Cl. C07c *91/44*

U.S. Cl. 260—575 6 Claims

A method of manufacturing o-aminophenol comprising contacting under anhydrous conditions phenylhydroxylamine with trifluoroacetic anhydride at a first temperature between about —50 and 150° C. and then at a second temperature between about 70 and 150° C. to form a mixture of N-trifluoroacetyl-o-hydroxyaniline and O-trifluoroacetyl-o-hydroxyaniline and contacting said mixture with a hydroxylic base to form said o-aminophenol.

3,711,552

PROCESS FOR THE MANUFACTURE OF N,N-BIS-(2-CHLOROETHYL)-2-NITRO-4-ALKYLANILINE

Harold M. Foster, Park Forest, Thomas C. Rees, Park Forest South, and Floyd G. Spencer, Park Forest, Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Filed Mar. 16, 1970, Ser. No. 20,108

Int. Cl. C07c *87/52*

U.S. Cl. 260—577 2 Claims

A process for the direct ortho-mononitration of N,N-dihaloalkyl-4-substituted tertiary aromatic amines in the presence of less than fivefold molar excess over theoretical of nitric acid and optionally a catalytic amount of nitrous acid, or a derivative thereof capable of generating nitrite ions in aqueous acid, optionally in the presence of a hydrophobic, essentially immiscible organic phase, without the formation of 2,6-dinitro-4-substituted product or unwanted by-products. Specifically, a process for the manufacture of N,N-bis(2-chloroethyl)-2-nitro-p-toluidine by the nitration of N,N-bis(2-chloroethyl)-p-toluidine. The N,N-bis(2-chloroethyl)-2-nitro-p-toluidine is a repellent for Mexican bean beetles and beetle larvae.

3,711,553
TRICYCLIC KETONES

Hans Schmid, Schwerzenbach, and Janos Zsindely, Dubendorf, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Feb. 24, 1969, Ser. No. 801,796
Claims priority, application Switzerland, Mar. 15, 1968, 3,899/68
Int. Cl. C07c *49/36, 49/38*
U.S. Cl. 260—586 R **8 Claims**

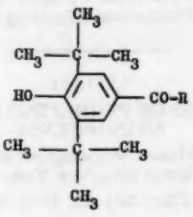
Tricyclo[3,2,1,$0^{2,7}$]-octen - 3 - en - 8 - ones which are useful in the perfumery art and a process for their preparation from phenols including intermediates in this process.

3,711,554
4-HYDROXY-3,5 DITERTIARY PHENONES

Manfred Engelhardt, Wolfgang Fruhstorfer, Reiner Hesse, Bernd Dennler, and Wilhelm Baumer, Darmstadt, Germany, assignors to E. Merck A.G., Darmstadt, Germany

No Drawing. Filed Nov. 25, 1969, Ser. No. 879,922
Claims priority, application Germany, Nov. 28, 1968, P 18 11 322.9
Int. Cl. C07c *49/82*
U.S. Cl. 260—591 **17 Claims**

Stabilizers, for plastics, oils and fats, of the formula



I

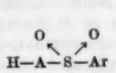
wherein R is alkyl of 4 to 25 carbon atoms; alkyl of up to 25 carbon atoms in which one or more of the methylene groups are replaced by —O—, —S—, —NR_1— and/or CO; morpholino-alkylene wherein the alkylene bridge contains 1 or 2 carbon atoms; cyclohexyl or cyclopentyl unsubstituted or substituted with —R_1, —OR_1, —SR_1 or —NR_1R_2; or phenyl which is mono- or polysubstituted with alkyl of 1 to 18 carbon atoms, —OR_1, —SR_1 or —NR_1R_2; or aralkyl whose alkyl portion contains from 1 to 10 carbon atoms and in which one or more CH_2-groups can be replaced by —O—, —S—, —NR_1— and/or CO, and whose aryl portion can be mono- or polysubstituted by —R_1, —OR_1, —SR_1 and/or —NR_1R_2; can be produced by reacting 2,6-di-tert.-butylphenol with an acid derivative of the formula R—CO—X wherein X is —O—CO—R′ or halogen, R′ being R or R_1, in the presence of a Lewis acid, e.g., $AlCl_3$ or $TiCl_3$.

3,711,555
ARYL ALLYL SULFONES

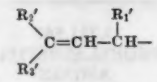
Jacques Martel, Bondy 93, and Chanh Huynh, Villemombie 93, both of France, assignors to Roussel-UC Laf, Paris, France

Division of Ser. No. 662,278, Aug. 22, 1967, abandoned. This application Dec. 16, 1969, Ser. No. 885,634
Claims priority, application France, Aug. 26, 1966, 6674404; Aug. 26, 1966, 6674405; Feb. 24, 1967, 6796425; June 16, 1967, 67110719; July 19, 1967, 67114833
Int. Cl. C07c *147/06*
U.S. Cl. 260—607 A **7 Claims**

Aryl allyl sulfones of the formula



wherein Ar is phenyl optionally substituted with lower alkyl, lower alkoxy, halomethyl, nitro or halogen and HA has the formula



wherein R′$_1$ is hydrogen or lower alkyl and

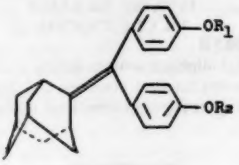
form fluorene or saturated or unsaturated cycloalkyl of three to seven carbon atoms optionally substituted with one or more lower alkyl and/or lower alkoxy useful as intermediates in the preparation of cyclopropanecarboxylic acid esters having insecticidal activity.

3,711,556
2-[BIS(p-SUBSTITUTED PHENYL)METHYLENE] ADAMANTANES

Kyu Tai Lee, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

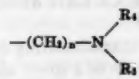
No Drawing. Filed June 13, 1968, Ser. No. 736,600
Int. Cl. C07c *39/16*
U.S. Cl. 260—613 R **4 Claims**

2-[bis(p-substituted phenyl)methylene]adamantanes of the formula

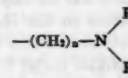


wherein R_1 and R_2 are the same or different and are hydrogen, alkyl of from 1 through 5 carbon atoms, cyclopentyl,

wherein R_3 is hydrogen or alkyl of from 1 through 10 carbon atoms,



wherein *n* is 2 or 3, and R_4 and R_5 are the same or different and are hydrogen or alkyl of from 1 through 3 carbon atoms or R_4 and R_5 taken together with said nitrogen atom form piperidino, pyrrolidino or morpholino; and pharmaceutically acceptable salts of said compounds wherein at least one of R_1 and R_2 is



are useful for preventing pregnancy of female warm-blooded animals.

3,711,557

PROCESS FOR OXIDIZING CYCLOALIPHATIC HYDROCARBONS IN THE LIQUID PHASE AND RELEVANT APPARATUS

Gastone Bartalini, Nedo Brischetto, and Mario Giuggioli, Novara, Italy, assignors to Societa Rhodiatoce S.p.A., Milan, Italy

Filed Dec. 5, 1969, Ser. No. 882,435
Claims priority, application Italy, Dec. 12, 1968, 24,967/68
Int. Cl. C07c 27/12
U.S. Cl. 260—617 H 6 Claims

Cycloaliphatic hydrocarbons are continuously oxidized in liquid-phase by molecular oxygen in the presence of at least a boron compound insoluble in the reaction medium wherein a portion of the crude reaction mixture, before being conveyed to the subsequent processing steps, is subjected to a clarification process, wherein substantially all the excess insoluble boron compound is separated and recycled into the reactor together with the remaining portion of the crude reaction mixture, the clarified portion being sent to the subsequent processing steps according to techniques known per se.

3,711,558

PROCESS FOR THE PREPARATION OF AROMATIC GLYCOLS

Ching Yun Huang, Minoo, and Tamostu Maeno, Suita, both of Japan, assignors to Japan Gas-Chemical Company, Inc., Tokyo, Japan

Division of Ser. No. 614,347, Feb. 6, 1967, Pat. No. 3,546,301. This application July 8, 1970, Ser. No. 53,257
Claims priority, application Japan, Feb. 10, 1966, 41/7825
Int. Cl. C07c 29/00
U.S. Cl. 260—618 R 5 Claims

A process for the preparation of aromatic glycols which comprises saponifying an aromatic hydrocarbon dihalomethyl compound by dispersing said compound as an oily substance or a water-soluble organic solvent solution into an aqueous solution of saponifying agent such as a hydroxide of an alkali metal, by means of tough shearing stirring, to form an oil-in-water emulsion.

3,711,559

MONOALKYLATION OF ALKYLIDENE BIS(PHENOL)

Gordon Roy Ensor, Llangollen, Wales, assignor to Monsanto Chemicals Limited, London, England

Filed Feb. 26, 1968, Ser. No. 707,968
Int. Cl. C07c 37/14, 37/16, 37/18
U.S. Cl. 260—619 A 13 Claims

An alkylidene bis(phenol) which may be formed in situ, if desired, is reacted with an alkylating agent in a reaction medium of 50 to 80 percent aqueous sulfuric acid to give the monoalkylate as the major component.

3,711,560

PROCESS FOR THE PREPARATION OF UNSATURATED HYDROCARBONS AND UNSATURATED OXYGENATED COMPOUNDS

Hugh E. Ramsden, Scotch Plains, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 625,023, March 22, 1967, Pat. No. 3,388,179, which is a continuation-in-part of Ser. No. 423,293, Jan. 4, 1965, abandoned. This application April 29, 1968, Ser. No. 725,200
Int. Cl. C07c 33/02; A61k 7/00
U.S. Cl. 260—632 B 5 Claims

Hydrocarbon polyolefins and oxygenated organic compounds, such as alcohols, glycols, ketones, diketones, and diacids, which compounds contain at least two olefinic sites of unsaturation per molecule are secured by contacting a diolefin-magnesium addition compound with various reagent systems. The organomagnesium compound has the generic formula $(R')_nMg$ wherein R′ is a C_4 to C_{40} conjugated diolefin and mixtures thereof and n is an integer varying from 2 to 8.

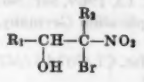
3,711,561

NOVEL PREPARATION OF BROMONITRO ALCOHOLS

Richard Wessendorf, Essen-Heisingen, Germany, assignor to Henkel & Cie. GmbH, Dusseldorf, Germany

Filed Oct. 22, 1970, Ser. No. 83,191
Claims priority, application Germany, Oct. 28, 1969, P 19 54 173.2
Int. Cl. C07c 31/34
U.S. Cl. 260—633 9 Claims

A novel process for preparing bromonitro alcohols of the formula



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wherein R_1 is selected from the group consisting hydrogen, methyl and halogenated methyl and R_2 is selected from the group consisting of hydrogen and methyl and ethyl which may be substituted with at least one hydroxy group comprising reacting an aldehyde with a nitroalkane in the presence of an aqueous alkali metal hydroxide and reacting the reaction product with bromine at temperatures below 25° C.

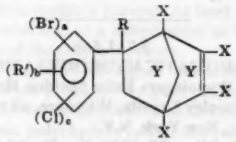
3,711,562

PROCESS FOR PREPARING BROMINATED STYRENE HALOCYCLOPENTADIENE COMPOUNDS

James J. Maul; James E. Stevens, both of Grand Island, and Ronald L. Schendel, Niagara Falls, all of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed June 29, 1970, Ser. No. 50,602
Int. Cl. C07c 25/18
U.S. Cl. 260—649 R 19 Claims

Compounds of the structure



are prepared by reacting the Diels-Alder adduct of a styrene compound and a halocyclopentadiene compound with a halogenating agent which is a mixture of chlorine and bromine in a two reactor process, wherein X is a halogen independently selected from the group consisting of fluorine, chlorine and bromine; Y is independently selected from the group consisting of alkyl of one to 10 carbon atoms, alkoxy of one to 10 carbon atoms, monohaloalkyl of one to 10 carbon atoms and halogen, wherein said halo- and halogen are independently selected from the group consisting of fluorine, chlorine and bromine; R and R′ are independently selected from the group consisting of hydrogen and lower alkyl of one to six carbon atoms; a ranges from about 3 to 4, $c = 0$ to 1 and b is 0 to 1.

3,711,563

PRODUCTION OF HALOGENATED HALOCYCLOPENTADIENE ADDUCTS OF STYRENE

Richard D. Carlson, Grand Island, and James L. Dever, Lewiston, both of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed June 29, 1970, Ser. No. 51,009
Int. Cl. C07c 25/18
U.S. Cl. 260—649 R 15 Claims

A process is described for preparing halogenated halocyclopentadiene adducts of styrene by reacting a styrene derivative with a halogenated cyclopentadiene in a Diels-

Alder reaction, and then halogenating the aromatic ring to contain between 1 and 5 halogen atoms.

The resulting compounds are useful as fire retardant additives in various elastomers and plastics, especially acrylonitrile-butadiene-styrene (ABS).

3,711,564

NOVEL SULFONYLAMINOPYRIMIDINES AND COMPOSITIONS CONTAINING THEM

Manfred Hubner, Ludwigshafen (Rhine); Ruth Heerdt, Mannheim-Feudenheim; Felix Helmut Schmidt, Mannheim-Neuostheim; Kurt Stach, Mannheim-Waldhof, and Walter Aumuller, Kelkheim-Munster, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Oct. 13, 1969, Ser. No. 866,023

Claims priority, application Germany, Oct. 17, 1968, P 18 03 582.0

Int. Cl. C07d *51/42*

U.S. Cl. 260—256.5 R **10 Claims**

Novel sulfonylaminopyrimidines, particularly 4-[β-fluorenyl-(9)-acylamido-alkylene]-N-[pyrimidinyl-(2)]-benzenesulfonamide compounds and the corresponding indan-5-sulfonamide compounds, exhibit outstanding antidiabetic activity.

3,711,565

PROCESS FOR STABILIZING DIENES

Hubert Lauer, and Bernhard Schleppinghoff, both of Dormagen, Germany, assignors to Erdoelchemie Gesellschaft mit beschrankter Haftung, Cologne, Germany

Filed Oct. 18, 1971, Ser. No. 190,260

Claims priority, application Germany, Oct. 21, 1970, P 20 51 548.4

Int. Cl. C07c *7/18*

U.S. Cl. 260—666.5 **6 Claims**

Aliphatic dienes such as butadiene and isoprene containing nitrogen containing polymerization inhibitors are stabilized against accelerated dimerization by adding thereto iron complex-forming compounds.

3,711,566

AROMATIC HYDROGENATION

John H. Estes, Wappingers Falls; Sheldon Herbstman, Spring Valley, and Stanley Kravitz, Wiccopee, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 25, 1970, Ser. No. 92,894

Int. Cl. C07c *5/10*

U.S. Cl. 260—667 **11 Claims**

A process for the low pressure hydrogenation of aromatic hydrocarbons in the presence of sulfur employing a fluorided platinum-alumina catalyst and carbon monoxide as a conversion reaction moderator. By employing a fluorided platinum-alumina catalyst and the moderator carbon monoxide, aromatic hydrocarbon saturation is accomplished while simultaneously inhibiting concurrent hydrocracking reactions.

3,711,567

BIS-TRIPHENYLENES AND USE IN PHOTOCHROMIC AND LUMINESCENT COMPOSITIONS

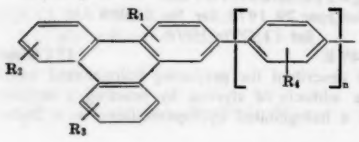
John Edwin Innes, Bridgewater Township, Somerset County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

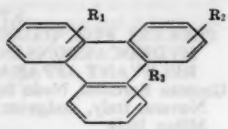
Filed Dec. 16, 1970, Ser. No. 98,942

Int. Cl. C07c *15/20*

U.S. Cl. 260—668 F **4 Claims**

Triphenylene dimers of the formula:





wherein n is 0, 1 or 2 and each of R_1, R_2, R_3 and R_4 is one to four carbon lower alkyl, one to four carbon lower alkoxy, or hydrogen, are formed by reacting 2-bromotriphenylene or its derivatives with butyl lithium and condensation with butyl bromide or cobaltous bromide, either directly or through an intermediate series of benzene rings to give a group of compounds which have uniquely useful and strong photochromic characteristics when dissolved in an oxygen and monomer free polymeric matrix.

3,711,568

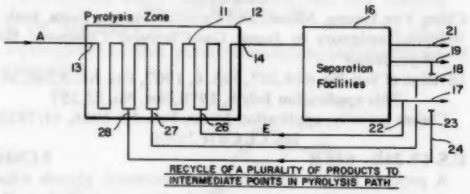
PYROLYSIS PROCESS

Herbert W. Cooper, 17 St. Lawrence Place, Jericho, N.Y.

Filed Sept. 24, 1970, Ser. No. 75,150

Int. Cl. C07c *3/30;* **C10g** *9/36, 9/14*

U.S. Cl. 260—683 R **2 Claims**



This disclosure teaches a process for pyrolysis of hydrocarbons wherein at least two pyrolysis product are recycled to two different points in the pyrolysis furnace. Three or more pyrolysis products are recycled and introduced into the furnace at a plurality of points on the pyrolysis path.

3,711,569

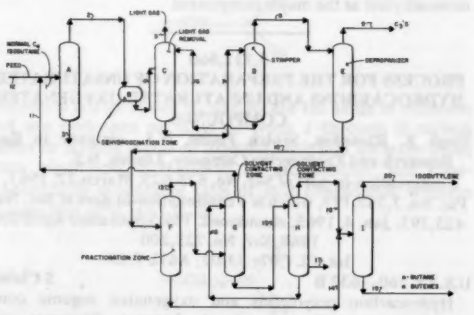
PRODUCTION OF ISOBUTYLENE

Lloyd D. Tschopp, Humble, and Terry D. Funkhouser, La Porte, both of Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Dec. 10, 1970, Ser. No. 96,895

Int. Cl. C07c *5/18, 11/08*

U.S. Cl. 260—683.3 **9 Claims**



Preparation of isobutylene from isobutane. Integrated process of feed preparation, dehydrogenation and purification.

3,711,570
ORGANOPOLYSILOXANE-POLYVINYL CHLORIDE BLENDS

Richard Newton Lewis, Tecumseh, Mich., assignor to Stauffer-Wacker Silicone Corporation, Adrian, Mich.

Continuation-in-part of Ser. No. 861,986, Sept. 29, 1969, abandoned. This application Feb. 10, 1971, Ser. No. 114,396
Int. Cl. C08g *47/10*; C08f *29/24*
U.S. Cl. 260—827 8 Claims

Thixotropic organopolysiloxane compositions comprising a blend of a room-temperature-curable organopolysiloxane and polyvinyl chloride. The organopolysiloxane is characterized by having moisture-reactive groups containing nitrogen, e.g., amino, amido, aminooxy, or oximo groups. These compositions show improved adhesion to various substrates.

3,711,571
CURABLE BLEND OF BLOCKED AND UNBLOCKED POLYURETHANES

Basil S. Farah, Elma, N.Y., assignor to Textron Inc., Providence, R.I.

Filed July 9, 1970, Ser. No. 53,678
Int. Cl. C08g *41/04*, *22/32*
U.S. Cl. 260—858 32 Claims

There are disclosed curable polyurethane compositions comprising:

I. A normally-liquid, free isocyanate-blocked urethane prepolymer composition comprising the reaction product of (A) a diisocyanate-polyol urethane prepolymer containing free isocyanate groups, and (B) an isocyanate-reactive oxime, said reaction product being made by reaction of an essentially stoichiometric equivalent of (B) per equivalent of free isocyanate in (A); and

II. an elastomeric, polyamine-extended polyurethane comprising the reaction product of (A) a diisocyanate-polyol urethane prepolymer containing free isocyanate groups, and (B) an isocyanate-reactive polyamine, said reaction product being made by the reaction of an essentially stoichiometric equivalent of (B) per equivalent of free isocyanate in (A). The compositions are normally cured at temperatures above room temperature, especially above about 70° C. and advantageously above about 130° or even above about 145° C. Additionally, the cured compositions are useful as coatings for both flexible and rigid articles such as textiles, leather, vinyl and rubber materials, metal, wood are rigid plastic materials. In a preferred embodiment, the oxime in (I) is methyl ethyl ketoxime and the polyamine in (II) is 1-amino-3-aminomethyl-3,5,5-trimethyl cyclohexane, while the urethane prepolymer in both (I) and (II) is prepared from toluene diisocyanate or 1-isocyanato-3-isocyanato methyl-3,5,5-trimethyl cyclohexane with trimethyol propane as the polyol in (I) and a polyester of a glycol and adipic acid as the polyol in (II). The coatings prepared from the compositions of this invention are normally highly resistant to abrasion and chemical attack.

3,711,572
POLYESTER RESIN COMPOSITION WITH A LONG SHELF LIFE

Eldon E. Stahly, Ellicott City, and Edwin W. Lard, Bowie, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

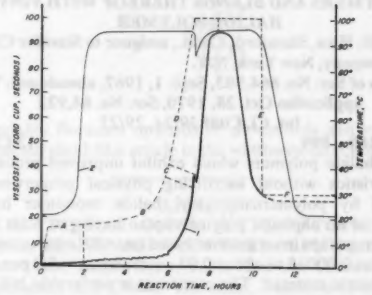
Continuation-in-part of Ser. No. 782,711, Dec. 10, 1968, abandoned. This application Nov. 13, 1970, Ser. No. 89,496
Int. Cl. C08f *43/02*, *43/00*
U.S. Cl. 260—864 8 Claims

Uncured, curable, unsaturated polyester resin compositions consisting essentially of an unsaturated polyester, an ethylenically unsaturated monomer such as styrene or a similar monomer inhibited with about 0.1–1.5 mole percent of 2-nitroresorcinol having shelf lives in excess of about 100 days at about 70° C.

3,711,573
WATER-SOLUBLE CATIONIC POLYMERS AND GRAFT POLYMERS

Daniel Elmer Nagy, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 778,934, Nov. 26, 1968, Pat. No. 3,567,659. This application May 22, 1970, Ser. No. 39,874
Int. Cl. C08f *35/06*, *29/56*
U.S. Cl. 260—874 7 Claims



A cationic, water-soluble, storage-stable, methylamine-epichlorohydrin polymer is prepared by reacting a quantity of a methylaminelepichlorohydrin polymer which is well below its gel point with successively added small amounts of epichlorohydrin until the polymer nears the stage at which it is an irreversible gel, and then reacting the polymer with sufficient methylamine to inactivate substantially all amine-reactive epichlorohydrin residues present. At least the last step of the reaction is performed at a temperature at which a partial depolymerization of the polymer occurs.

Water-soluble polymers of higher molecular weight and larger dimensions are produced by graft polymerizing one or more water-soluble vinyl monomers upon a hydrophilic water-dispersible cationic poly(hydroxyalkylene) polyamine, which is not necessarily the foregoing polyamine. The polymers are flocculants for suspended solids in sewage and mine effluent water and dry strength agents for paper.

3,711,574
COPOLYMERS OF ACRYLAMIDE GAS

Dieter Jaworek, Tutzing/Obb.; Wolfgang Gruber, Garatshausen, and Hans Ulrich Bergmeyer, Tutzing/Obb., all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Feb. 6, 1970, Ser. No. 9,442
Claims priority, application Germany, Feb. 19, 1969, P 19 08 290.7
Int. Cl. C08f *15/40*, *29/34*
U.S. Cl. 260—878 R 8 Claims

Water insoluble biologically active proteins are bound on novel copolymers consisting of (a) acrylamide (b) ethylene-maleic acid or its anhydride and/or (c) maleic acid and/or its anhydride and (d) N,N′-methylene-bis-acrylamide or ethylene diacrylate in a weight ratio *a:b:c:d* of 3 : 0.5 – 1.5 : 0.05 – 4 : 0.075 – 0.9, the weight ratio *a* : (*b* + *c*) being not more than 4, to provide compositions which are outstanding in their ability to yield up the bound protein, and with which precise substrate reactions can be carried out.

3,711,575

THREE STAGE EMULSION AND SUSPENSION IN PROCESS FOR PRODUCTION OF IMPACT RESISTANT THERMOPLASTIC RESINS

Koiti Kakefuda; Tatsuo Ito, both of Ichihara, and Yasuyuki Okano, Hitachi, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Jan. 28, 1971, Ser. No. 110,637
Claims priority, application Japan, Feb. 6, 1970, 45/10035
Int. Cl. C08f *15/40*
U.S. Cl. 260—881 **14 Claims**

3,711,576

POLYMERCAPTAN MODIFIED VINYL HALIDE POLYMERS AND BLENDS THEREOF WITH VINYL HALIDE POLYMER

Jesse C. H. Hwa, Stamford, Conn., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 664,903, Sept. 1, 1967, abandoned. This application Oct. 28, 1970, Ser. No. 84,922
Int. Cl. C08f *29/24, 29/22*
U.S. Cl. 260—899 **13 Claims**

Vinyl halide polymers which exhibit improved processing characteristics without sacrificing physical properties are prepared by polymerizing vinyl halide monomer in the presence of an aliphatic polymercaptan having at least three mercaptan groups in an amount based on —SH equivalence of from about 0.00015 to about 0.05 equivalence —SH per mole of monomeric material. The monomer is preferably 100 percent vinyl chloride though mixtures containing a predominant amount of vinyl chloride with minor amounts of other ethylenically unsaturated monomers can also be used.

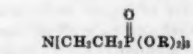
3,711,577

NITRILO(ETHYLENEPHOSPHONIC ACID ESTERS)

Ludwig Maier, Zurich, Switzerland, assignor to Monsanto Co., St. Louis, Mo.

Filed Feb. 11, 1970, Ser. No. 10,604
Int. Cl. C07f *9/40*; D06c *27/00*
U.S. Cl. 260—932 **2 Claims**

Compounds of the formula



in which R is a hydrocarbon group or hydrogen atom and a process for preparing them by reacting tri(2-chloroethyl)amine with a phosphite of the formula

$$MOP(OR)_2 \text{ or } P(OR)_2OR'$$

wherein M is an alkali metal or R′ is a hydrocarbon group and preparing the acid by acid hydrolysis or pyrrolysis of the ester. Exemplary compounds are nitrilotri(ethylenephosphonic acid) and nitrilotri(ethylenephosphonic acid diethylester) which are useful as additives to detergents, as lubricants and flameproofing agents.

3,711,578

(N-ALKOXYCARBONYL-N-ALKYLCARBAMOYL) DIALKYL PHOSPHONO-THIOATES AND THIOLOTHIONATES

Max Pianka, St. Albans, England, assignor to The Murphy Chemical Company Limited, Albans, England

Filed July 8, 1969, Ser. No. 840,063
Claims priority, application Great Britain, July 15, 1968, 33,690/68
Int. Cl. C07f *9/40*; A01n *9/36*
U.S. Cl. 260—942 **17 Claims**

Organo-phosphonates, -phosphonothioates and -phosphonothiolothionates having inter alia insecticidal, acaricidal and nematicidal activities.

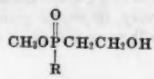
3,711,579

METHYL 2-HYDROXYETHYL METHYL (METHYLOL) PHOSPHINATES AND PROCESS FOR THEIR PRODUCTION

Theodore Curtis Shields, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,774
Int. Cl. C07f *9/32*; D06c *27/00*
U.S. Cl. 260—953 **8 Claims**

Novel compounds of the present invention represented by the following structural formula.



wherein R is methyl or hydroxymethyl. The process for their preparation is also included. The novel compounds of the present invention are useful in imparting flame retardancy to fibrous materials.

3,711,580

O-CHLORO-SUBSTITUTED ALKYL-S-ALKYL-S-BENZYL-PHOSPHORO-DITHIOLATES

Shiego Kishino; Sadao Uchihira; Yoshio Kurahashi, and Toyohiko Kume, all of Tokyo, Japan, assignors to Farbenfabriken Bayer Aktiengesellshaft, Leverkusen, Germany

Filed Dec. 4, 1969, Ser. No. 882,274
Claims priority, application Japan, Dec. 6, 1968, 43/88959
Int. Cl. C07f *9/16*, A01n *9/36*
U.S. Cl. 260—963 **14 Claims**

O-chloro-substituted alkyl-S-alkyl-S-benzyl-phosphorodithiolates, i.e. O-chloro-substituted alkyl-S-alkyl-S-benzyl-dithiolphosphates, which possess fungicidal properties and which may be produced by conventional methods.

ERRATUM

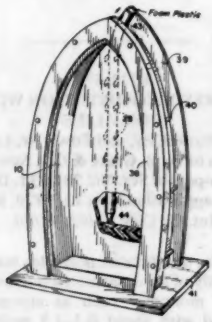
For Class 260—954 see:
Patent No. 3,711,582

3,711,581

METHOD OF MOLDING A COMPOSITE FRAMED RESIN ARTICLE

Aubrey A. Fowler, Jr., P.O. Box 443, Fairmont, N.C., and Henry O. McKee, Fairmont, N.C., assignors to said Fowler, by said McKee

Continuation-in-part of Ser. No. 387,404, Aug. 4, 1964, abandoned. This application July 2, 1970, Ser. No. 81,211
Int. Cl. B29d *7/22, 27/04*
U.S. Cl. 264—45 **3 Claims**



The method of forming a first unstable moldable material having predetermined physical properties and a second stable

moldable material compatible with the first material but having different physical properties to provide a unitary structure having the properties of both materials as well as the physical properties created by the interaction of the materials.

3,711,582

N-ISOPROPYL-PHOSPHORO-AMIDO-THIOATES

Gerhard Schrader, Wuppertal-Cronenberg; Ludwig Eue, Cologne-Stammheim; Helmuth Hack, Cologne-Buchheim, all of Germany; Seiichi Hirane, Tokyo, Japan; Masahiro Aya, Tokyo, Japan; Shigeo Kishino, Tokyo, Japan, and Nobuo Fukazawa, Tokyo, Japan, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 20, 1969, Ser. No. 867,874
Claims priority, application Japan, Oct. 25, 1968, 43/77755
Int. Cl. C07f *9/22*
U.S. Cl. 260—954 **9 Claims**

N-isopropyl-phosphoro-amido-thioates, i.e. O-(2-nitro-4-halo-phenyl)-O-alkyl-N-isopropyl-phosphoro-amidothioates or O-(2-nitro-4-halo-phenyl)-O-alkyl-N-isopropylamido-thionophosphates, which possess herbicidal properties and which may be produced by conventional methods.

ERRATUM

For Class 260—465.80 A see:
Patent No. 3,711,078

3,711,583

METHOD OF PRODUCING POLYAMIDE MEMBRANES AND RIGID FOAMED PRODUCTS

Lawrence A. Sklar, 14697 Northeast 18th Avenue, North Miami, Fla.

Continuation-in-part of Ser. No. 560,124, June 24, 1966, abandoned. This application Dec. 31, 1969, Ser. No. 889,331
Int. Cl. B29d *7/20, 7/24, 27/00;* **C08g** *20/40*
U.S. Cl. 264—49 **9 Claims**

Polyamide membranes of desired thickness are prepared by dissolving polyamide in HCl, admixing paraformaldehyde and then zinc chloride to produce a viscous paste, forming expanded gelatinous material by treatment with formaldehyde, curing this material and applying tensile stress thereto. Rigid, water insoluble, polyamide foam material is prepared by treating polyamide with concentrated solution of zinc chloride in HCl to make a gum-like solid and supernatant liquid, admixing 1,3,5-trioxane and the gum-like solid to make a homogeneous, light, and flowable paste which is then cured in a suitable mold at atmospheric conditions, preferably in the presence of weakly acidic water. The membranes are useful, e.g., for bandages and the nylon foam is useful, e.g., as a construction material, for trays, containers, etc.

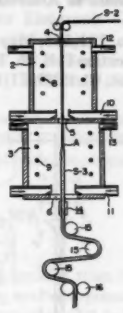
3,711,584

PROCESS FOR FOAMING A SHEET OF ETHYLENIC RESIN DURING DOWNWARD MOVEMENT OF THE SHEET

Norio Sagane, Kyto; Shinsaku Nakata, Toyonaka-shi; Hiroshi Ueda, Urawa-shi, and Teiji Matsumara, Minamisaitama-gun, all of Japan, assignors to Sekisui Kagaku Kogyo Kaubushiki Kaisha, Osaka, Japan

Filed Sept. 26, 1969, Ser. No. 861,288
Int. Cl. B29d *27/00*
U.S. Cl. 264—54 **10 Claims**

Process and apparatus for producing a wrinkle-free, highly foamed sheet of an ethylenic resin having a uniform and fine cellular structure by causing a long strip of a sheet-like molded article of a cross-linked ethylenic resin containing a normally solid organic blowing agent to fall downwardly and continuously transferring it in the falling direction, heating the sheet-like molded article in transit to a foaming temperature, the heating being controlled so that a starting position of foaming along the widthwise direction of the sheet-like article will not



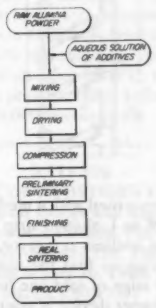
appreciably fluctuate upwards or downwards and extending the foamed sheet-like article in the widthwise direction.

3,711,585

USE OF YTTRIA-MAGNESIA MIXTURES TO PRODUCE HIGHLY TRANSPARENT SINTERED ALUMINA BODIES

Akinori Muta, Tokyo; Gyozo Toda, Hino-shi; Takanobu Noro, Yokohama, and Chieko Yamazaki, Tokorozawa-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 12, 1969, Ser. No. 849,448
Claims priority, application Japan, Aug. 19, 1968, 43/58557
Int. Cl. C04b *35/10, 35/04, 35/50*
U.S. Cl. 264—65 **17 Claims**



By using a combination of magnesia and yttria, or their precursors, in small amounts as sintering aids for alumina, sintered bodies having very high in-line transmission properties are produced. In addition the sintering time and/or temperature required to achieve a given inline transmission is reduced as compared with using only magnesia as a sintering aid.

3,711,586

METHOD OF INCREASING TENSILE STRENGTH OF PLASTIC MATERIALS

James S. Muraoka, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy

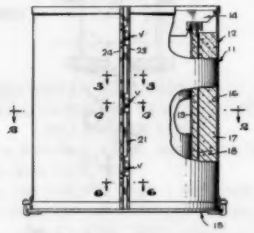
Filed March 18, 1971, Ser. No. 125,827
Int. Cl. B29c *23/00, 25/00*
U.S. Cl. 264—88 **2 Claims**

Plastic ropes composed of polyethylene and polypropylene strands exposed to high hydrostatic pressure materially increase in tensile strength without a corresponding increase in strand diameter.

3,711,587
METHOD OF VIBRATING A MOLD CASE

James F. O'Connor, Long Beach, and Gordon J. Black, Nuevo, both of Calif., assignors to Ameron, Inc., Monterey Park, Calif.

Division of Ser. No. 732,335, May 27, 1968, Pat. No. 3,611,516. This application Feb. 26, 1971, Ser. No. 119,314
Int. Cl. B28b *21/14*
U.S. Cl. 264—71 1 Claim

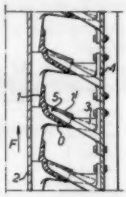


The outer steel shell or case of a mold for casting concrete pipe having a gate and vibrators mounted on the gate with their axes of rotation normal to the axis of the case and outside the case.

3,711,588
CORRUGATED EDGING FOR AN ENDLESS CONVEYOR

Georges Piemont, 7 rue Rabelais, Vanves, France

Filed Feb. 2, 1971, Ser. No. 111,931
Claims priority, application France, Feb. 6, 1970, 7004198
Int. Cl. B29h *7/22*
U.S. Cl. 264—231 9 Claims

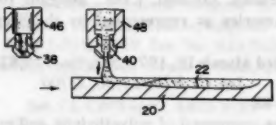


The invention is concerned with a method of forming corrugations in one limb of an L-shaped strip of uncured rubber to form an edge for an endless conveyor. The strip is wound around a shaper device so that the strip takes up a curved shape with the outer edge of said one limb placed under tension, and then the shaper device is operated to perform portions of said one limb into corrugations. The portions are held in the deformed positions while the strip is cured.

3,711,589
METHOD TO FORM ELONGATE PLASTIC ARTICLES

Norman H. Nye, 1348 Highbridge Road, Cuyahago Falls, and Arthur T. Medkeff, 1591 Chapman Drive, Akron, both of Ohio

Filed Aug. 19, 1970, Ser. No. 64,946
Int. Cl. B29c *9/00*
U.S. Cl. 264—245 2 Claims

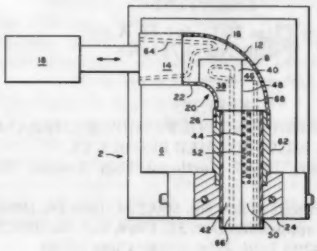


Method for making elongate multi-colored articles from a plastic material including movable a series of molds through a fixed path, depositing a controlled amount of heated liquid plastic material of one color into one end portion of an open top mold cavity of one of the molds and then depositing a heated liquid plastic material of a second color in overlapping relation to a portion of the first material and filling the remaining portion of the mold cavity with a second material. The method is carried out employing apparatus providing controlled discharge of regulated amounts of the two plastic materials by means positioned in immediate association with each other for prompt discharge of the second material in the mold cavity after the first material has been introduced into the mold and including a plurality of substantially vertically extending control links positioned adjacent a pair of discharge head assemblies present in the apparatus.

3,711,590
METHOD FOR MOLDING ARTICLES HAVING A NONLINEAR CHAMBER

Peter R. Deutsch, Titusville, Pa., assignor to Phillips Petroleum Company

Filed Dec. 21, 1970, Ser. No. 99,847
Int. Cl. B29c *1/06*; B29d *23/00*
U.S. Cl. 264—318 2 Claims



A first molding core is positioned within a first portion of a separable mold having a nonlinear chamber. A second molding core having an end matable with the end of the first core is inserted within a second end portion of the chamber of the mold adjacent and in slidable contact with a third molding core. The first molding core is retractable from the mold and the second and third molding cores are pivotally connected to one of the mold sections for removing the molded article and the second and third molding cores from the mold section. The third molding core is slidable along the second molding core for releasing the article from the second and third molding cores.

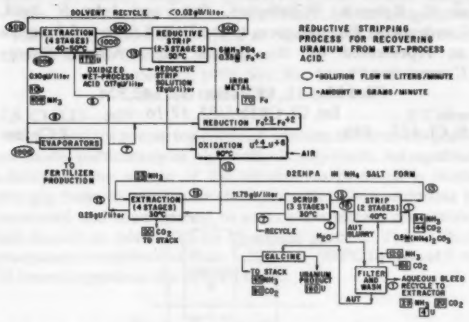
3,711,591
REDUCTIVE STRIPPING PROCESS FOR THE RECOVERY OF URANIUM FROM WET-PROCESS PHOSPHORIC ACID

Fred J. Hurst, and David J. Crouse, both of Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed July 8, 1970, Ser. No. 53,058
Int. Cl. B01d *11/00*
U.S. Cl. 423—10 3 Claims

A reductive stripping flow sheet for recovery of uranium from wet-process phosphoric acid is described. Uranium is stripped from a uranium-loaded organic phase by a redox reaction converting the uranyl to uranous ion. The uranous ion is reoxidized to the uranyl oxidation state to form an aque-

ous feed solution highly concentrated in uranium. Processing of this feed through a second solvent extraction cycle requires



far less stripping reagent as compared to a flow sheet which does not include the reductive stripping reaction.

3,711,592

METHOD FOR SEPARATION OF TUNGSTEN CHLORIDE FROM A MIXTURE OF METAL CHLORIDES

Kurt Alfred Jonsson, Sandhamnsvagen 27, and Elis Kjell Ake Svanstrom, Bjorkstigen 8, both of Synashamn, Sweden

Continuation-in-part of Ser. No. 856,211, Sept. 8, 1969. This application May 17, 1971, Ser. No. 144,295

Claims priority, application Sweden, Sept. 12, 1968, 12273/68

Int. Cl. C01g *41/00*

U.S. Cl. 423—60 **12 Claims**

Tungsten hexachloride is separated from a mixture of metal chlorides comprising tungsten pentachloride and other metal chlorides by first distilling the mixture so as to remove lower boiling chlorides than tungsten pentachloride. The mixture is then chlorinated, preferably at a temperature around that of the boiling point of the tungsten pentachloride. Generally the chlorination will be continued as the temperature of the mixture is increased to about the boiling point of tungsten hexachloride. The chlorination is continued until essentially all of the pentachloride has been converted to hexachloride. The hexachloride may be distilled from higher boiling chlorides if they are present in the mixture to thereby obtain a high purity product which can be converted to tungsten metal by reduction.

3,711,593

FLUIDIZED PROCESS FOR REGENERATION OF CHEMICALS FROM SULFITE PULPING PROCESS

Philip E. Shick, Toledo, Ohio, and William H. Flood, Acton, Mass., assignors to Owens-Illinois, Inc.

Continuation of Ser. No. 830,430, Jan. 4, 1969, abandoned. This application Aug. 12, 1971, Ser. No. 171,308

Int. Cl. C01d *5/14*

U.S. Cl. 423—207 **6 Claims**

A method for regenerating a sodium base sulfite cooking liquor by utilizing a multi-stage fluid bed treatment. In the method for regenerating the liquor, the spent liquor is first treated in a fluid bed reactor with gases containing water vapor and carbon dioxide at a temperature less than 1100°F., to pyrolyze the liquor solids, to gasify the sulfur in the liquor and to produce a pelletized solid residue consisting of primarily sodium carbonate and carbon. This residue is then treated with air and water at a temperature greater than 1100°F. in a second fluid bed reactor to produce a solid product consisting primarily of sodium carbonate and gases suitable for use in the first reactor. The gaseous products of the first reactor are further oxidized with air to convert sulfur compounds to sulfur dioxide, which is then absorbed in a solution of sodium carbonate from the second reactor, thus regenerating sodium sulfite for preparation of pulping liquor.

3,711,594

PROCESS FOR MAKING BORON NITRIDE BODIES

Klaus Bienert, Winifried Lang, and Herbert Weidner, all of 8263 Burghausen, Germany, assignors to Walker-Chemitronic Gesellschaft fur Elektronic Grundotoffe M. b. H, Burghausenoff, Germany

Filed Jan. 27, 1971, Ser. No. 110,245

Int. Cl. C01b *21/06*

U.S. Cl. 423—290 **3 Claims**

Process for making highly pure detrition-resistant boron nitride pressed bodies from a boron-nitrogen-hydrogen compound having the general basic empirical formula

$$BN_{3-x}H_{6-x},$$

where the value of x is greater than 1 and smaller than 2, which comprises heating said compound to a temperature of 20° to 2,000° C under a pressure of 0.5–10 t/cm².

3,711,595

CHEMICAL METHOD FOR PRODUCING DIAMONDS AND FLUORINATED DIAMONDS

John L. Margave, Houston, Tex.; Renato G. Bautista, Ames, Iowa; Peter J. Ficalora, Syracuse, N.Y., and Ramachandra B. Badachhape, Houston, Tex., assignors to R. I. Patents, Inc., Houston, Tex.

Filed July 22, 1971, Ser. No. 165,316

Int. Cl. C01b *31/06*

U.S. Cl. 423—446 **17 Claims**

Diamonds, as well as fluorinated diamonds, can be produced by reacting a fluorinated carbon material, such as polytetrafluoroethylene, carbon monofluoride or polytrichlorofluoroethylene, with aluminum, magnesium or nickel at temperatures in excess of about 375°C. and pressures in excess of about 5,000 atmospheres. The preferred reaction temperature range is from about 600°C. to about 750°C. and the preferred reaction pressure range is from about 10,000 atmospheres to about 20,000 atmospheres.

3,711,596

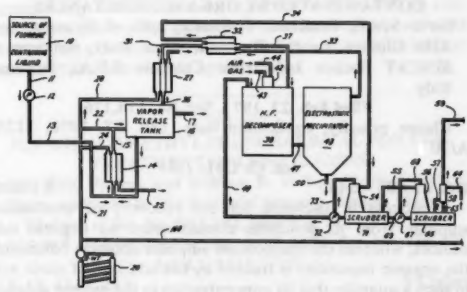
RECOVERY OF HYDROGEN FLUORIDE

Rufus G. Hartig, c/o Gulf Design and Engineering Corp., 124 South Ingraham Avenue, Lakeland, Fla.

Filed March 4, 1965, Ser. No. 437,110. The portion of the term of this patent subsequent to July 16, 1986, has been disclaimed.

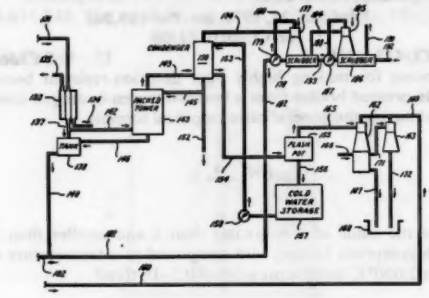
Int. Cl. C01b *7/22*

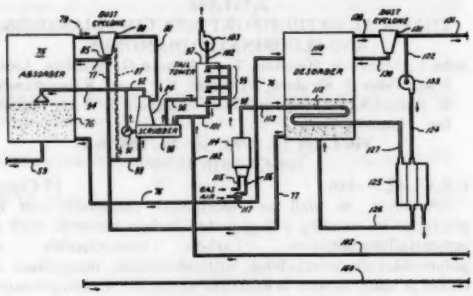
U.S. Cl. 423—483 **2 Claims**



The disclosure 113 of methods for recovering hydrogen fluoride from aqueous feed liquids containing fluosilicic acid

in solution. The fluosilicic acid is converted to 07161986 hydrogen fluoride, which is reclaimed by absorption and





desorption, using sodium fluoride-sodium bifluoride in fluidized beds.

3,711,597

PROCESS FOR THE RECOVERY OF AMMONIUM SULPHATE FROM IT AQUEOUS SOLUTIONS CONTAMINATED BY ORGANIC SUBSTANCES

Alberto Scarfì, Emanuele Gugliotta, both of Siracusa, and Aldo Giudice, Lentini Siracusa, all of Italy, assignors to SINCAT Societa Industriale Catonese S.P.A., Palermo, Italy

Filed Feb. 23, 1971, Ser. No. 118,176

Claims priority, application Italy, Feb. 27, 1970, 21252 A/70

Int. Cl. C01c *1/24*

U.S. Cl. 423—545 **8 Claims**

A process is disclosed for the recovery of ammonium sulphate from its solutions contaminated by organic substances, wherein the ammonium sulphate solution containing the organic impurities is treated by the addition of nitric acid in such a quantity that its concentration in the mother solution of the subsequent evaporation phase does not exceed 15 percent by weight; the solution thus treated being then subjected to evaporation; and the crystallized ammonium sulphate being subsequently separated from the mother solution and from the organic impurities.

3,711,598

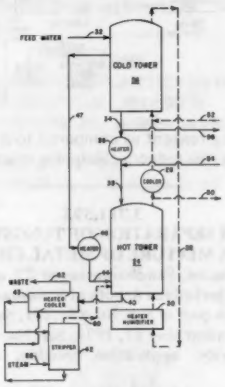
INCREASED RECOVERY IN DUAL TEMPERATURE ISOTOPE EXCHANGE PROCESS

Dale F. Babcock, Wilmington, Del., and John S. Neill, Landenberg, Pa., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed May 11, 1971, Ser. No. 142,324

Int. Cl. C01b *5/02, 17/16*

U.S. Cl. 423—580 **7 Claims**



A liquid with a gas each containing a desired isotope flow counter-currently through two liquid-gas contacting towers. The towers are maintained at different temperatures to enrich the liquid in the isotope within the cold tower and the gas in the isotope within the hot tower. Liquid, having the natural concentration of the desired isotope, is fed into the top of the cold tower and gas flowing upwardly through the towers is recirculated from the top of the cold tower into the bottom of the hot tower. The liquid feed is then increased and a portion of the liquid is withdrawn from an intermediate location in the upper portion of the cold tower and fed into the lower portion of the hot tower to increase the productivity of the process. This process is particularly applicable to the recovery of deuterium oxide from water.

3,711,599

METHOD OF PREPARING FIBROUS MAGNESIUM OXIDE

Burton D. Brubaker, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 622,046, March 10, 1967, abandoned. This application April 13, 1970, Ser. No. 28,103

Int. Cl. C01f *5/06, 5/10, 5/12*

U.S. Cl. 423—638 **6 Claims**

This specification discloses a method of preparing fibers of magnesium oxide, nickel oxide, and solid solutions thereof by forming a liquid film of reaction mixture containing a magnesium or nickel salt and as auxiliary salt; reacting said film mixture with water vapor to initiate fibrous growth at a temperature of from about 700°C to 1,200°C; continually supplying a film mixture over the fibers to sustain growth; and separating the fibers from any residual mixture, thereby to produce said fibers which are characterized by unusually high tensile strength and resistance to high temperatures.

3,711,600

PROCESS FOR PREPARING CALCINED OXIDES

Bernard J. Sturm; Roger B. Quincy, Jr., both of Oak Ridge, Tenn., and Charles T. Butler, Stillwater, Okla., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 22, 1970, Ser. No. 100,775
Int. Cl. C01f 5/08, 11/04
U.S. Cl. 423—639 8 Claims

A method for preparing calcined calcium oxide or magnesium oxide, particularly in high-bulk-density form. An aqueous solution of the nitrate of the alkaline earth metal is made strongly basic to precipitate the hydroxide. The precipitate is recovered and then washed to reduce the nitrate concentration therein to within 0.5 to 15 weight percent. The washed precipitate is calcined at from 1,200 to 1,500°C for about 5 to 30 hours to produce the desired oxide.

3,711,601

ENRICHING WITH HEAVY HYDROGEN ISOTOPES

James J. Reilly, Jr., Bellport, N.Y., and Richard H. Wiswall, Jr., Brookhaven, N.Y., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Feb. 12, 1971, Ser. No. 115,139
Int. Cl. C01b 4/14
U.S. Cl. 423—648 3 Claims

A method of recovering deuterium and tritium from hydrogen comprising exposing vanadium hydride to gaseous mixtures containing the heavy isotopes of hydrogen and allowing the heavy isotopes to undergo mass transference with the hydrogen of the vanadium hydride until the ratio of heavy hydrogen isotope atoms to hydrogen atoms in the vanadium hydride is greater than the ratio in the gas.

3,711,602

COMPOSITIONS FOR TOPICAL APPLICATION FOR ENHANCING TISSUE PENETRATION OF PHYSIOLOGICALLY ACTIVE AGENTS WITH DMSO

Robert John Herschler, Camas, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 753,231, Aug. 16, 1968, abandoned, which is a continuation-in-part of Ser. No. 329,151, Dec. 9, 1963, abandoned. This application Oct. 30, 1970, Ser. No. 85,697. The portion of the term of this patent subsequent to Dec. 28, 1987, has been disclaimed.
Int. Cl. A61k 9/00
U.S. Cl. 424—45 11 Claims

Compositions for topical application for enhancing tissue penetration of physiologically active agents with dimethyl sulfoxide (DMSO). Such agents include physiologically active steroids, antineoplastic agents, antigens, antihistaminic agents, neuropharmacologic agents, antiinflammatory agents, anticoagulants, vasodilators, ultra-violet screening agents and nutrients. Such compositions, which may be in the form of lotions, ointments and suppositories, include the physiologically active agent, at least 10% by weight of DMSO and a pharmaceutically acceptable thickening agent. Liquid formulations for topical application of DMSO and the physiologically active agent in spray containers are also provided.

3,711,603

METHOD OF CONTROLLING BACTERIA WITH TRICHLOROACRYLONITRILE

Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Co., New York, N.Y.

Filed May 26, 1971, Ser. No. 147,195
Int. Cl. A01n 9/20
U.S. Cl. 424—304 1 Claim

This invention relates to a method of controlling bacteria by applying an effective amount of trichloroacrylonitrile to the habitat thereof.

3,711,604

FLUORIDE CONTAINING TRANSPARENT DENTIFRICE

Daniel Colodney, Green Brook, and Martin Cordon, Highland Park, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed July 19, 1971, Ser. No. 164,070
Int. Cl. A61r 7/16
U.S. Cl. 424—52 24 Claims

Transparent dentifrice formulations including a fluorine containing ingredient, preferably stannous fluoride, are disclosed. The fluorine ingredient is incorporated in aesthetically pleasing speckles that are uniformly dispersed throughout the clear dentifrice.

3,711,605

ANTIBIOTIC A150A

Robert L. Hamill, New Ross; Michael E. Haney, Jr., West Lafayette, and Marvin M. Hoehn, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 14, 1971, Ser. No. 143,344
Int. Cl. A61k 21/00
U.S. Cl. 424—122 1 Claim

Antibiotic A150A, produced by *Streptomyces hygroscopicus* strain NRRL 3444 under submerged aerobic fermentation conditions in liquid culture medium and recovered from the fermentation broth any mycelium by extraction, has activity against a variety of microorganisms, including bacteria, fungi, and protozoa, and is especially active against some plant pathogens.

3,711,606

ENHANCING TISSUE PENETRATION OF PHYSIOLOGICALLY ACTIVE STEROIDAL AGENTS WITH DMSO

Robert John Herschler, Camas, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 753,231, Aug. 16, 1968, Pat. No. 3,551,554, which is a continuation-in-part of Ser. No. 329,151, Dec. 9, 1963, abandoned. This application Sept. 2, 1970, Ser. No. 69,155
Int. Cl. A61k 17/00
U.S. Cl. 424—243 9 Claims

A method of enhancing tissue penetration of physiologically active steroidal agents by conjointly applying them to the tissue with dimethyl sulfoxide. Penetration of the skin and the mucous membranes of the body cavities by these agents may be enhanced by cojoint application of such agents and dimethyl sulfoxide directly to such membranes. Preferably, for penetration of these agents through the skin compositions of DMSO at concentrations of 50 percent and above are employed and for penetration through mucous membranes, compositions including DMSO at concentrations of 10 percent and above are employed. Steroidal Agents may be advantageously administered by injection with DMSO in concentrations preferably up to 20 percent by weight to enhance penetration of internal tissue membranes barriers to achieve better distribution of these agents.

3,711,607

N,N -DIHALOMETHYL PHENOBARBITAL FOR THE TREATMENT OF CONVULSIONS

Julius Vida, Boston, and William R. Wilber, Newton, both of Mass., assignors to The Kendall Company, Boston, Mass.

Division of Ser. No. 804,292, March 4, 1969, Pat. No. 3,635,980. This application March 17, 1971, Ser. No. 125,429
Int. Cl. A61k 27/00
U.S. Cl. 424—254 8 Claims

N,N′-dihalomethyl phenobarbital compounds, including N,N′-dichloromethyl phenobarbital, N,N′-dibromomethyl phenobarbital, and N,N′-difluoromethyl phenobarbital are described as well as therapeutic compositions containing the same and their use as anticonvulsant agents.

3,711,608

THE TREATMENT OF PAIN, FEVER AND INFLAMMATION WITH BENZIMIDAZOLES

William C. Campbell, Summit, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed April 13, 1971, Ser. No. 133,705
Int. Cl. A61k 27/00
U.S. Cl. 424—270 7 Claims

Pharmaceutical formulations containing therapeutically effective quantities of 2-substituted and 2,5-disubstituted benzimidazoles are employed in the application of anti-inflammatory, analgesic and antipyretic therapy.

3,711,609

CERTAIN FURAZAN DERIVATIVES IN THERAPEUTIC COMPOSITIONS AND METHODS

Claude Lehmann; Ernest Renk, and Andre Gazneux, all of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 702,553, Feb. 2, 1968, abandoned. This application Oct. 15, 1970, Ser. No. 81,120
Int. Cl. A61k 27/00
U.S. Cl. 424—272 6 Claims

The compounds are of the class of furazan derivatives, more particularly 4-amino-5-phenyl furazan derivatives wherein the phenyl ring is further substituted. The compounds are useful as anticonvulsive and muscle-relaxing agents and agents depressing the central nervous system (CNS). An illustrative embodiment is 3-amino-4-(2,6-xylyl) furazan.

3,711,610

ANTICOCCIDIOSIS METHOD AND COMPOSITIONS INVOLVING INDAZOLYLPHENYLUREAS AND INDAZOLYLPHENYLTHIOUREAS

Frederick K. Kirchner, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 859,569, Sept. 19, 1969, Pat. No. 3,647,819. This application June 1, 1971, Ser. No. 149,018
Int. Cl. A61k 27/00
U.S. Cl. 424—273 3 Claims

A series of indazolylphenylureas and indazolylphenylthioureas, useful for preventing and suppressing coccidiosis in poultry, are prepared by the condensation of an aminoindazole and a phenylisocyanate or a phenylisothiocyanate.

3,711,611

COMPOSITION OF MATTER WITH LOW CHOLESTEROL CONTENT AND CONTAINING WOOL GREASE ALCOHOLS AS MAJOR COMPONENT AND METHOD

Percy L. Julian, 515 North East Avenue, Oak Park, Ill.

Filed April 23, 1971, Ser. No. 137,028
Int. Cl. A61k 7/00, 9/06
U.S. Cl. 424—358 8 Claims

A new and useful dispersing and emulsifying agent derived from wool grease made by separating cholesterol from the unsaponifiables and replacing the cholesterol with β-sitosterol, to form an improved essentially wool wax alcohol product.

3,711,612

DERIVATIVES OF 5H-DIBENZ(B,F)AZEPINE-4-CARBOXYLIC ACIDS IN A METHOD AND COMPOSITIONS FOR TREATING INFLAMMATION

Norbert Gruenfeld, Bronx, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 54,603, July 13, 1970, Pat. No. 3,624,072, which is a continuation-in-part of Ser. Nos. 693,114, Dec. 26, 1967, and Ser. No. 851,761, Aug. 20, 1969, said Ser. No. 693,114, is a continuation-in-part of Ser. No. 604,160, Dec. 23, 1966, abandoned. This application Jan. 28, 1971, Ser. No. 110,642
Int. Cl. A61k 27/00
U.S. Cl. 424—244 12 Claims

5H-Dibenz[b,f]azepines-4-carboxylic acid, the 10,11-dihydro and other substituted derivatives thereof are anti-inflammatory agents. They can be prepared, among other ways, through treatment of the appropriate 4,5-oxalyl-5H-dibenz[b,f]azepine with aqueous base followed by hydrogen peroxide. Esterification, N-acylation and/or amidation can optionally follow. Typical embodiments are 3-methoxy-10,11-dihydro-5H-dibenz[b,f]azepine-4-carboxylic acid and 3,7-dichloro-5H-dibenz[b,f]azepine-4-carboxylic acid.

3,711,613

COMPOSITIONS CONTAINING 3-NITROIMIDAZO(1,2-B)PYRIDAZINES AND METHOD OF USE FOR TREATING AMOEBAE AND TRICHOMONAE

Andrew Stephen Tomcufcik, Old Tappan, and Raymond George Wilkinson, Montuale, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 24, 1971, Ser. No. 118,509
Int. Cl. A61k 27/00
U.S. Cl. 424—250 6 Claims

Compositions of a pharmaceutically acceptable carrier and a 3-nitroimidazo[1,2-b]pyridazine and methods of using the same are described. These compositions are useful for their anti-protozoal activity as anti-trichomonal and anti-amebic agents.

3,711,614

METHOD OF CONTROLLING FUNGI IN PLANTS AND SEEDS USING ORTHO-SUBSTITUTED BENZOATES AND THIOBENZOATES

Hans Osieka, Ludwigshafen; Karl-Heinz Koenig, Frankenthal, and Ernst-Heinrich Pommer, Limburgerhof, all of Germany, assignors to Badische-Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Sept. 17, 1969, Ser. No. 858,838
Claims priority, application Germany, Sept. 24, 1968, P 17 93 480.4
Int. Cl. A01n 9/20, 9/12
U.S. Cl. 424—308 3 Claims

A process for protecting objects against fungi attack by treating the objects with a fungitoxic amount of a substituted benzoic ester.

3,711,615

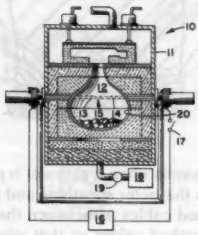
PLASMA HEATING METHOD

Donald H. Petersen, Dallas, and Warren C. Schwemer, Arlington, both of Tex., assignors to Advanced Technology Center, Inc., Grand Prairie, Tex.

Division of Ser. No. 786,140, Dec. 23, 1968, Pat. No. 3,520,977. This application Sept. 30, 1969, Ser. No. 871,206

Int. Cl. H05b 7/00

U.S. Cl. 13—1 7 Claims



An electric furnace adapted to be heated with a gaseous plasma, and including within the furnace a quantity of low work function material which promotes the establishment and sustenance of the gaseous plasma, said quantity being on the order of about one milligram per square centimeter of furnace area.

3,711,616

ELECTRODE HOLDER, FOR INSTANCE, FOR AN ELECTROSLAG PLANT

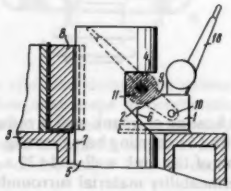
Boris Izrailevich Medovar; Jury Fedorovich Alferov; Rudolf Solomonovich Dubinsky; Jury Vadimovich Latash; July Georgievich Emelyanenko, and Vitaly Mikhailovich Baglai, all of Kiev, U.S.S.R., assignors to Institut Elektrosvarki Imeni E.O. Patona Akademii Nauk Ukrainskoi SSR, Kiev, U.S.S.R.

Filed April 8, 1971, Ser. No. 132,431

Claims priority, application U.S.S.R., April 16, 1971, 1,422,424

Int. Cl. H05b 7/10

U.S. Cl. 13—16 6 Claims



An electrode holder, for instance, for an electroslag plant, comprises a clamping member in the form of a rod locating the electrode in a working position relative to a plant frame, and a supporting member arranged on the frame; the supporting member has an inclined surface on which surface is placed the clamping member mating with the electrode and displacing over the above surface under the action of the mass of the electrode and making it thereby fast with respect to the plant frame.

3,711,617

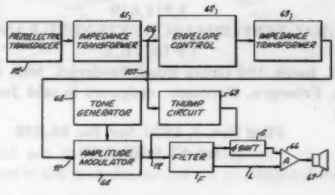
ELECTRONIC PIANO WITH THUMP-GENERATING MEANS

Chauncey R. Evans, Costa Mesa, Calif., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed Aug. 20, 1970, Ser. No. 65,619

Int. Cl. G10c 3/12

U.S. Cl. 84—1.01 23 Claims



An electronic piano of the type wherein monomorph piezoelectric transducer is employed in conjunction with a piano key and a tone generator in order to create piano and other sounds. Flexible support and filter elements are provided to generate the "thump" or "knock" sound characteristic of a piano. A threshold circuit is associated with the key in such manner as to insure generation of a tone even when the pianist presses on the key with such excessive softness that the piezoelectric transducer does not operate. A phase-shift vibrato circuit is provided to simulate the out-of-tune overtones of a conventional piano. The circuit associated with the piezoelectric transducer incorporates Darlington-type impedance transformers on both sides of the envelope-controlling capacitor. Switches are combined with the piano key in a manner facilitating removal of the key when desired.

3,711,618

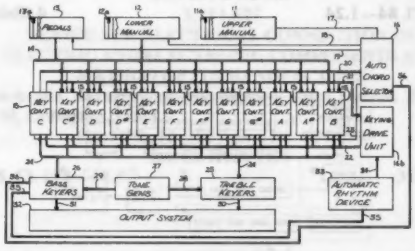
AUTOMATIC HARMONY APPARATUS

Alfred B. Freeman, 20418 Seaboard Road, Malibu, Calif.

Continuation of Ser. No. 783,205, Dec. 12, 1968, abandoned. This application Feb. 22, 1971, Ser. No. 117,681

Int. Cl. G10h 1/00

U.S. Cl. 84—1.03 29 Claims



Apparatus for use with electronic organs and the like which selects chords automatically in response to melody and other playing on the instrument and which sounds harmony, selected by automatic or manual means, in prescribed relations to the melody being played. The apparatus responds intelligently to melody and other playing in a preselected musical key to select chords from a preselected set in a normal progression order. The apparatus is responsive to an Automatic Rhythm Device for sounding parts of the selected chords in different pitch ranges in various rhythmic patterns

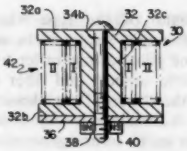
including the sounding of the root and fifth parts alternately in the bass. Notes played manually on the instrument add to or replace the notes of the automatically selected chords and the apparatus sounds either or both manually and automatically selected chords and the apparatus sounds either or both manually and automatically selected notes in either close or open harmony relation to the melody being played.

3,711,619

NATURAL PERFORMANCE EXTENDED RANGE PICK-UP DEVICE

Ralph S. Jones, 100 Grove Road, Frederick, Md., and Willi L. Stich, Erlangen, Germany, assignors to said Jones, by said Stich

Filed Nov. 4, 1970, Ser. No. 86,839
Int. Cl. G10h *3/00*
U.S. Cl. 84—1.15 **5 Claims**



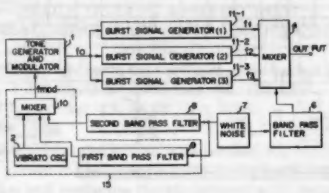
A pick-up device for electrical guitars and like instruments includes pick-up coil formed by first and second windings wound in parallel on the same coil bobbin one on top of the other. The impedance of first, inner winding is less than that of the second winding, a turns ratio of one to four being typical, and the resultant output characteristic of the composite coil provides high quality reproduction of both treble and bass.

3,711,620

MUSICAL TONE SIGNAL GENERATOR

Akio Kameoka, Kawasaki; Shinichi Nakamura, Yokohama, and Mamoru Kuriyagawa, Kamakura, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Jan. 27, 1971, Ser. No. 110,189
Claims priority, application Japan, Jan. 29, 1970, 45/7332
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.24 **4 Claims**



A musical tone signal generator comprising a generator of a modulation signal consisting of a mixture of vibrato signal, first random noise signal and second random noise signal of higher frequency than the former; burst signal generators each for generating a burst signal in synchronization with fundamental tone signals modulated by output from said modulation signal generator; and a mixer for mixing said vibrato signals, random noise signals and burst signals thereby to obtain musical tone signals.

ERRATUM

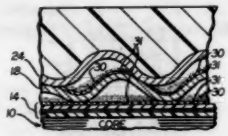
For Class 174—84 S see:
Patent No. 3,710,911

3,711,621

MOISTURE BLOCK IN SHEATHED TELEPHONE CABLES

Ludwik Jachimowicz, Elizabeth, N.J., assignor to General Cable Corporation, New York, N.Y.

Filed Feb. 18, 1971, Ser. No. 116,519
Int. Cl. H01b *7/18, 7/28*
U.S. Cl. 174—23 R **8 Claims**



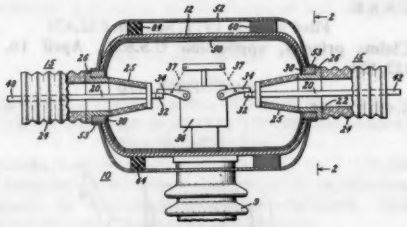
A powder that swells when it gets wet is placed in an electrical cable between the outer sheathing and the inner sheathing for double sheathed cables or between the sheathing and the core of single sheathed cables so that when and if the outer sheathing is perforated, and water that enters causes the powder to swell and to block the space under the sheathing so that water can not travel along the length of the cable under the sheathing. The powder remains dry as long as there is no perforation of the sheathing, and when dry the powder fills only a part of the space under the sheathing.

3,711,622

MEANS FOR REDUCING EDDY CURRENT HEATING OF A TANK IN ELECTRICAL APPARATUS

Don W. Deno, Berwyn, Pa., assignor to General Electric Company

Filed March 3, 1972, Ser. No. 231,519
Int. Cl. H01f *27/28;* **H05k** *9/00*
U.S. Cl. 174—35 CE **4 Claims**



Eddy current heating of a tank wall is reduced by providing the tank wall with (1) shorting bars forming a secondary loop around a portion of the tank wall and (2) a highly laminated core of high permeability material surrounding the tank wall and in such a position that the core is encircled by said secondary loop. The shorting bar outside the tank wall is spaced therefrom to provide thermal insulation between this bar and the tank wall.

3,711,623

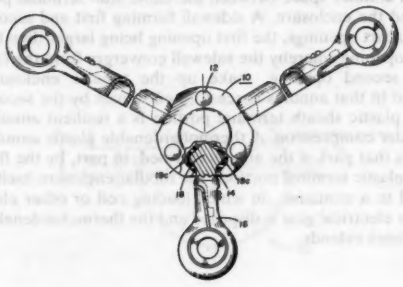
CABLE SPACERS FOR ELECTRICAL OVERHEAD TRANSMISSION LINES

Donald James Schiavone, Huron, Ohio, assignor to Gould Inc.

Filed March 31, 1972, Ser. No. 240,116
Int. Cl. H02g *7/12*
U.S. Cl. 174—40 R **4 Claims**

A device for spacing electrical conductors which are used in high voltage transmission lines. The device includes a central hub provided with two or more cavities. A rigid arm articulately extends into each cavity. The arm is provided at one end

with a truncated double cone or knob-like structure and the other end is provided with means for holding the conductor. Interposed between the inside walls of the cavity and the knob



of the rigid arm, within each cavity, is an elastomeric sleeve having a substantially circumferentially continuous groove arranged adjacent to and alongside of the intersection of the two cones which comprise the knob.

3,711,624

CABLE VIBRATOR DAMPER WITH MOVEABLE ADDITIONAL WEIGHTS

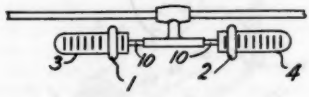
Philip Wellesley Dulhunty, Sefton, New South Wales, Australia, assignor to Dulmison (Australia) Pty. Limited, Sefton, New South Wales, Australia

Filed Aug. 2, 1971, Ser. No. 168,371

Claims priority, application Australia, Aug. 7, 1970, PA2096/70

Int. Cl. H02g *7/14*

U.S. Cl. 174—42 **8 Claims**



A Stockbridge vibration damper for cables having at least one weight of elongated shape in combination with at least one additional weight adapted to be removably attached to the outer surface of said elongated weight at any selected region along the length of the major axis of each said elongated weight.

3,711,625

PLASTIC SUPPORT MEANS FOR LEAD FRAME ENDS

Jean M. Dupuis, Kanata, Ontario, Canada, assignor to Microsystems International Limited, Montreal, Quebec, Canada

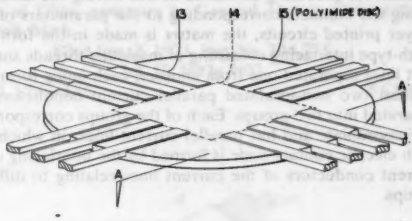
Filed April 5, 1971, Ser. No. 131,108

Claims priority, application Canada, March 31, 1971, 109,223

Int. Cl. H05k *5/00*

U.S. Cl. 174—52 PE **19 Claims**

The invention relates to the support and location of lead ends of a lead frame employed in the manufacture of an integrated circuit assembly. The lead ends are partially embedded in a polyimide pad by the action of controlled heat and



pressure, and are thus located and supported during subsequent stages in the manufacture of the packaged device.

3,711,626

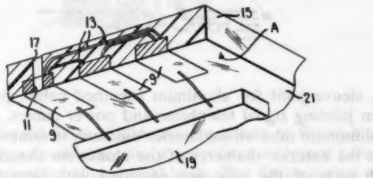
CIRCUIT BOARD

Jack S. Kilby, and James H. Van Tassel, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 515,903, Dec. 23, 1965, abandoned. This application Sept. 29, 1969, Ser. No. 870,881

Int. Cl. H05k *1/00*

U.S. Cl. 174—68.5 **7 Claims**



A single-sided or a double-sided circuit board is provided with mounted semiconductor devices. The metal conductors on the circuit board are interconnected by wires embedded in the board itself, thereby dispensing with the need for a multilayered circuit board.

3,711,627

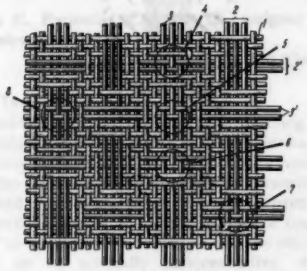
DEVICE FOR ELECTRICAL CONNECTION OF ELECTRIC AND ELECTRONIC COMPONENTS AND METHOD OF ITS MANUFACTURE

Konstantin Avraamovich Maringulov, ulitsa Sedova, 52, kv. 30, Leningrad, U.S.S.R.

Filed Dec. 12, 1969, Ser. No. 884,661

Int. Cl. H05k *1/04*

U.S. Cl. 174—68.5 **3 Claims**



A device for electrical connection of components of electric and electronic circuits is made in the form of a two-coordinate

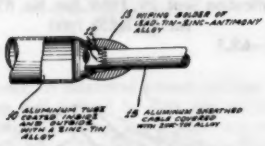
commutation matrix of interlaced current conductors, in which for the purpose of providing the possibility of doubling of circuit connections, for compacting the wiring and reducing its cost, for providing an elastic device having the density of laying the contacts corresponding to the parameters of multilayer printed circuits, the matrix is made in the form of a cloth-type interlacing consisting of insulating threads and current lines separated one from another, each being formed by at least two non-insulated parallel current conductors and separated into two groups. Each of the groups corresponds to one coordinate and has parallel current lines, in which case each electric contact node is formed by the interlacing of the current conductors of the current lines relating to different groups.

3,711,628

SLEEVE JOINT FOR ALUMINUM SHEATHED CABLE

Hans Olof Hansson, Sollentuna, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Feb. 3, 1971, Ser. No. 112,117
Claims priority, application Sweden, Feb. 25, 1970, 2409/70
Int. Cl. H02g *15/18*
U.S. Cl. 174—71 R **6 Claims**


12 WIRING SOLDER OF LEAD-TIN-ZINC-ANTIMONY ALLOY
10
ALUMINUM TUBE COATED INSIDE AND OUTSIDE WITH A ZINC-TIN ALLOY
18 ALUMINUM SHEATHED CABLE COVERED WITH ZINC-TIN ALLOY

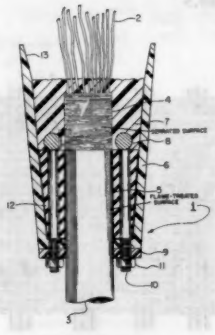
A sleeve joint for aluminum sheathed cable, particularly when jointing signal telephone and power cables, comprises an aluminum tube whose interior diameter is somewhat larger than the exterior diameter of the aluminum sheathed cable. Both ends of the tube are provided with slots forming a number of tongues which are deformable so that their extremities can be bent down to bear against the sheathed cable. The tongues and the continuous part of the tube are coated on their inside as well as their outside surfaces with a wiping solder consisting of lead, tin, zinc and antimony in special proportions.

3,711,629

CABLE TERMINUS FOR ENCAPSULATED LOAD COILS

William T. Jensen, Stratford, Ontario, Canada, assignor to Superior Continental Corporation, Hickory, N.C.

Filed July 16, 1971, Ser. No. 163,373
Int. Cl. H02g *15/04*
U.S. Cl. 174—76 **12 Claims**



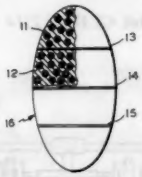
Disclosed herein is a novel telecommunication cable terminus, adapted to be connected to a container in which telecommunication loading coils are disposed. It is preferred that the outside terminal portion of that cable stub used with the herein disclosed terminus be divided into two portions, one portion being serrated and a second portion being flame treated. These cable stub terminal portions are longitudinally surrounded by and spaced apart from a tubular enclosure to form an annular space between the cable stub terminal portions and the enclosure. A sidewall forming first and second spaced-apart openings, the first opening being larger than the second opening whereby the sidewall converges from the first to the second opening, make up the tubular enclosure. Disposed in that annulus space formed in part by the second tubular plastic sheath terminal portion is a resilient annulus plug under compression. A thermohardenable plastic annulus occupies that part of the annulus formed, in part, by the first tubular plastic terminal portion. The tubular enclosure itself is fastened to a container, in which loading coil or other electronic or electrical gear is disposed and the thermohardenable plastic supra extends.

3,711,630

NONCIRCULAR CABLE

Gilbert Morieras, and Michel Sere de Lanauze, both of Lyon, France, assignors to CTA-Compagnie Industrielle de Textiles Artificiels et Synthetitiques, Paris, France

Division of Ser. No. 66,491, Aug. 24, 1970, Pat. No. 3,653,197.
This application Jan. 5, 1972, Ser. No. 215,592
Claims priority, application France, Sept. 1, 1969, 6929773
Int. Cl. H01b *7/02*
U.S. Cl. 174—119 **1 Claim**



A cable or cord of a noncircular cross-section, composed of a multiplicity of substantially parallel core yarns covered with a textile sheath, the core yarns being bound together and the sheath being bound to the core yarns by means of an adhesive or binder, such cord or cable being characterized in that the noncircular cross-section has at least one axis of symmetry and that, along the entire length of the cord or cable, at least one reinforcing element is present normal to the axis or one of the axes of symmetry, extending over the entire width of the core.

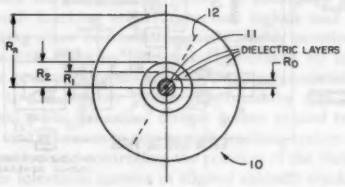
Such cables or cords are produced by impregnating a sheet of parallel core yarns with a binder, disposing the core yarns in the position that they will occupy in the finished noncircular cross-section cable or cord, and covering the core thus formed of parallel core yarns with a sheath, and thereafter vulcanizing the entire assembly, such process being characterized in that the core yarns provide a noncircular cross-section with at least one axis of symmetry and, at the time of formation of the core, reinforcing elements are introduced between the core yarns, such reinforcing elements also being impregnated with a binder, the elements being disposed along the entire length of the cable normal to the axis of symmetry or to one of the axes of symmetry of the core and extending over the entire width of the core at their point of introduction.

3,711,631

HIGH VOLTAGE MULTI-LAYER CYLINDRICAL DEVICES

Peter A. Denes, 9101 Crestwood, N.E., Albuquerque, N. Mex.

Filed Jan. 11, 1971, Ser. No. 105,267
Int. Cl. H01b 7/02
U.S. Cl. 174—120 SR 8 Claims



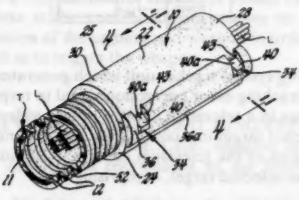
High voltage cylindrical devices having coaxial cylindrical insulation layers of different strength constants, the strength constants and the dimensions of the insulation layers being selected to achieve approximately the minimum obtainable outside diameter of the device or to achieve a device having a smaller outside diameter than a one layer device of equivalent electrical characteristics.

3,711,632

END FITTING FOR CORRUGATED CONDUIT

Paul S. Ghirardi, Masury, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 2, 1971, Ser. No. 204,121
Int. Cl. H02g 3/02
U.S. Cl. 174—135 3 Claims



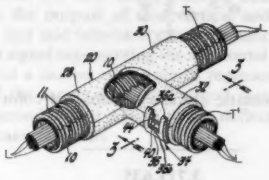
In a preferred form, this disclosure relates to an end fitting for use for a flexible, plastic, axially slit, corrugated tube for housing a plurality of electrical leads. The end fitting includes a pair of sections of generally semicircular cross-sectional shape which are integrally hinged by a hinge means along their adjacent side edges thereof and which are foldable about the hinge means to a closed position in which they surround the corrugated tube, and a releasable latching means for latching the sections together in their closed position. One end portion of each of the sections has arcuate, circumferentially and radially inwardly extending ribs which are adapted to be received between adjacent ones of the corrugations of the corrugated tube to lock the end fitting against relative movement axially of the tube, and the other end portions of the sections each have a radially inwardly extending member, the inwardly extending members defining a chordially extending barrier when the sections are in their closed positions so as to position the leads within the end fitting.

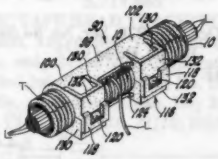
3,711,633

FITTING MEANS FOR AXIALLY SLIT CORRUGATED CONDUITS

Paul S. Ghirardi, Masury, and Eugene V. McGowan, Warren, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 2, 1971, Ser. No. 204,275
Int. Cl. H02g 3/02
U.S. Cl. 174—135 5 Claims





In a preferred form, this disclosure relates to fitting means for use with a flexible, plastic, axially slit, corrugated tube for housing a plurality of electrical leads. The fitting means each include first and second portions which are adapted to be attached to the corrugated tube at axially spaced locations and which define therebetween a space or opening through which one or more wires from the tube via the slit can be passed. Each of the portions includes a pair of semi-circular sections which are integrally hinged along one side edge thereof and which can be moved from an open position to a closed position in which they surround the tube. The sections are latched together in a closed position by a releasable latching means and each of the sections has an arcuately and radially inwardly extending rib which is adapted to be received between adjacent ones of the corrugations of the corrugated tube whereby the fitting means is locked against movement axially of the corrugated tube and serves to locate the lead being removed therefrom at a predetermined location.

3,711,634

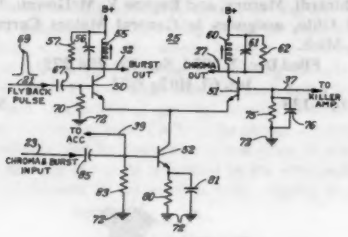
CHROMA-BURST SEPARATOR AND AMPLIFIER CIRCUIT

Panayiotis G. Portoulas, Chicago, Ill., assignor to Warwick Electronics Inc.

Filed Oct. 18, 1971, Ser. No. 190,038
Int. Cl. H04n 9/46
U.S. Cl. 178—5.4 SY 9 Claims

A combined separator/amplifier for deriving chroma and burst signals comprises a differential amplifier having a pair of differentially acting transistors coupled to a common current source. The current source is formed by a transistor driven by unseparated chroma and burst information from a composite color television signal. Bias networks force one differential transistor to be normally conductive and the other differential transistor to be normally nonconductive. An amplified chroma signal is available at the collector of the normally conductive transistor. During retrace, a single flyback pulse drives the differential transistors into their opposite conduction

states, causing an amplified burst signal to be available at the collector of the normally nonconductive transistor. The circuit includes automatic chroma control and color killer action.



3,711,635

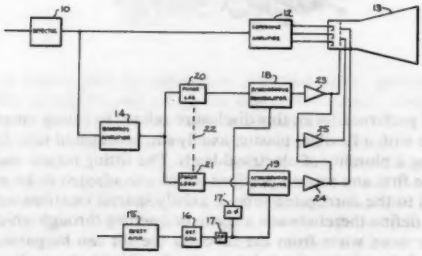
MEANS AND METHOD FOR MODIFYING THE FLESH-TONE RESPONSE OF A COLOR TELEVISION RECEIVER

Robert F. Worden, Portsmouth, Va., assignor to General Electric Company

Filed Oct. 26, 1970, Ser. No. 84,068

Int. Cl. H04n *9/12*

U.S. Cl. 178—5.4 HE **10 Claims**



Sensitivity to aberrations in signals carrying flesh-tone color information is reduced by asymmetrically increasing the chroma signal demodulation angle. A phase shifting circuit is placed in series with each of a pair of synchronous demodulators, and means are provided for simultaneously adjusting the circuits to shift the phase of the chroma signals applied to the demodulators. The chroma signals thus applied are phase-shifted to opposite directions, one being shifted approximately three times as much as the other. The relative amplitudes of the chroma signals outputted by the phase shift circuits to the chroma signals outputted by the phase shift circuits to the chroma signals outputted by the phase circuits to the demodulators are also progressively modified, the difference in relative amplitude increasing as the demodulation angle increases.

3,711,636

AUTOMATIC CONTRAST CONTROL CIRCUIT FOR A TELEVISION RECEIVER

Peter Johannes Hubertus Janssen, and Leonardus Adrianus Johannes Verhoeven, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

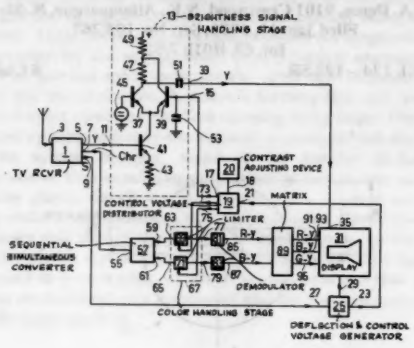
Continuation of Ser. No. 806,892, March 13, 1969, abandoned. This application June 9, 1971, Ser. No. 151,585

Claims priority, application Netherlands, March 26, 1968, 6804264

Int. Cl. H04n *5/20, 5/58, 9/48*

U.S. Cl. 178—5.4 R **8 Claims**

An automatic contrast control circuit features a transistor emitter coupled differential amplifier which has a luminance or chrominance signal applied to it. A circuit generates an automatic gain control voltage which is also applied to the differential amplifier. The gain of the amplifier can be adjusted to any value while still enabling linear amplification of the input signal. The sync signal amplitude is not affected.



3,711,637

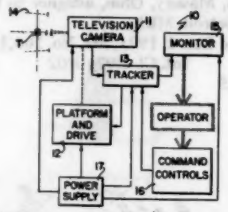
APPARATUS AND INFORMATION PROCESSING METHODS FOR A TRACKING SYSTEM TRACKER UNIT

Neil S. Deye, and Richard B. Kuhn, both of Columbus, Ohio, assignors to North American Rockwell Corporation

Filed Oct. 12, 1964, Ser. No. 403,396

Int. Cl. H04n *3/00*

U.S. Cl. 178—6.8 **9 Claims**



1. A tracking system tracker unit which generates an electrical azimuth tracking error correction signal in response to detected changes in a television camera output video signal picturing a selected target in a contrasting background to control the viewing axis of the television camera in azimuth tracking relation to the selected target, comprising:

a. Detector circuit means detecting voltage amplitude changes in the television camera output video signal and producing a detection pulse that identifies the real-time-position of an edge-like characteristic of the selected target,

b. First pulse generator circuit means generating a first marker pulse for each said detection pulse produced in said detector circuit means and introducing said first marker pulse into a first channel.

c. second pulse generator circuit means generating a second marker pulse in response to each detection pulse produced by said detector circuit means and introducing such second marker pulse in another and separate channel subsequent to said first marker pulse by a fixed time delay,

d. Third pulse generator circuit means generating a horizontal tracking gate pulse having a definite time duration and having a variable time-position in each line of horizontal scan of the television camera,

e. Two AND gate circuit means each receiving a different one of the said first and second marker pulses and said

horizontal tracking gate pulse and gating the time-coincident portion of said received pulses as an azimuth tracking error detection pulse,

f. Summing circuit means functioning to add the summing tracking error detection pulses gated by each of said two AND gate circuit means and producing a tracking error detection pulse signal representing their difference and representing the selection of a desired direction of azimuth tracking error correction, and

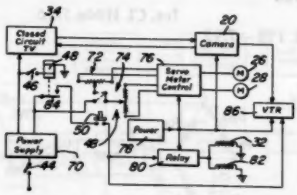
g. Integrator circuit means integrating the signals produced by said summing circuit means to form said electrical azimuth tracking error correction signal, said azimuth tracking error correction signal variably positioning the horizontal tracking gate pulse generated by said third pulse generator means in a non-singularly coincident relation to the marker pulses generated by said first and second pulse generator circuit means at said two AND gate circuit means to accomplish tracking system tracking correction and controlling the position of the viewing axis of the television camera in aligned azimuth tracking relation to the selected target.

3,711,638

REMOTE MONITORING AND WEAPON CONTROL SYSTEM

John Glen Davies, Route No. 2, Box 251, Aurora, Oreg.

Filed Feb. 2, 1971, Ser. No. 111,827
Int. Cl. H04n *7/02, 7/18*
U.S. Cl. 178—6.8 **4 Claims**



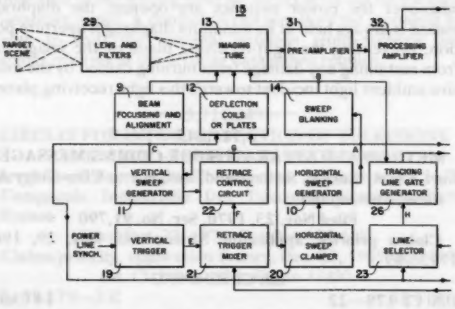
A weapon is adjustably positioned and synchronized for movement with a television camera by servo motors controlled from a remote control station. A closed circuit, monitoring receiver at the control station enables an operator to vary the position of the camera and weapon in order to track a target as well as to trigger the weapon.

3,711,639

TELEVISION TARGET TRACKING SYSTEM

Frederick C. Alpers, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 29, 1969, Ser. No. 79,469
Int. Cl. H04n *3/16*
U.S. Cl. 178—6.8 **4 Claims**



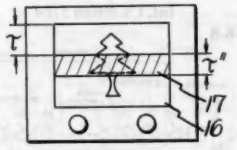
3. In a television type target tracking system a figure eight scan system comprising: a scan frequency oscillator for generating an output voltage, sin ωt, a frequency doubler circuit coupled to said scan frequency oscillator for generating a synchronized voltage, sin 2 ωt, television camera means including deflection coils and an imaging tube, circuit means coupling the output of said scan frequency oscillator and said frequency doubler as inputs to said deflection coils, vertical gate generator means having an input coupled to said scan oscillator and being triggered by the output sine wave of said scan oscillator near the zero value, horizontal gate generator means coupled to said scan oscillator through a 180° phase shifter and being triggered by the output sine wave of said scan oscillator near the zero value, tracking coincidence circuits coupled to the outputs of said vertical and horizontal gate generators and said television camera means for generating a first output signal representing the horizontal position of a target edge and a second output signal representing the vertical position of the target edge, and circuit means coupling said first and second output signals to the deflection coils of said television camera means.

3,711,640

MAGNETIC TAPE HEAD TRACKING INDICATOR

Masayuki Takano, Tokyo, and Yumihiko Suzuki, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed July 27, 1970, Ser. No. 58,218
Claims priority, application Japan, July 28, 1969, 44/59484
Int. Cl. G11b *27/36, 21/10;* **H04n** *5/78*
U.S. Cl. 178—6.6 A **9 Claims**



A magnetic tape recording and reproducing apparatus having a rotary magnetic head assembly for reproducing a recorded signal on a magnetic tape, and displaying the signal on a television screen, includes means for indicating the tracking condition of the head with respect to the recorded tracks on the tape. The indicating means includes a detector for detecting the value of the reproduced recorded signal, which signal varies in response to the tracking condition of the head, and an electronic circuit for generating a pulse signal in response to the detected value of the reproduced signal and mixing the pulse signal with the reproduced signal whereby an indication pattern is displayed on the television screen, which signal is representative of the value of the detected signal.

3,711,641

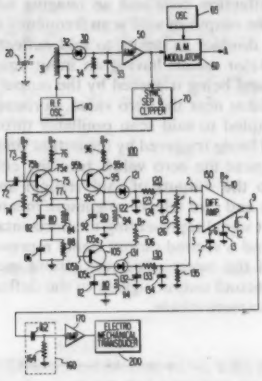
VELOCITY ADJUSTING SYSTEM

Richard Claxton Palmer, Blawenburg, N.J., assignor to RCA Corporation

Filed March 22, 1971, Ser. No. 126,797
Int. Cl. G11b *3/10, 25/04;* **H04n** *5/76*
U.S. Cl. 178—6.6 TC **16 Claims**

Circuit means are provided for detecting velocity errors in the rotational speed of a turntable employed to rotate a video disc. The circuit means provide a corrective error signal which

is processed and applied to an electro-mechanical transducer to which the pickup arm is mounted. The transducer imparts a



corrective longitudinal motion to the pickup arm to maintain the relative velocity between the pickup stylus and the groove at a predetermined value.

3,711,642

CIRCUITRY FOR DISPLAYING ISODENSITY LINES IN AN IMAGE

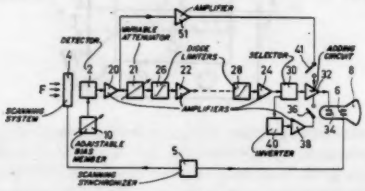
Michel Rene Jatteau, Hauts de Seine, France, assignor to North American Philips Co. Inc., New York, N.Y.

Filed Sept. 25, 1968, Ser. No. 762,480

Claims priority, application France, Sept. 26, 1967, 67122249

Int. Cl. H04n *5/14*

U.S. Cl. 178—6.8 **11 Claims**



A device for displaying isodensity lines of a radiation image on a CRT includes a radiation detector that provides a video signal that varies with the scanned radiation. A selector responsive to the video signal supplies first and second output signals. The first output signal is limited to a range between a given minimum and a given maximum value of the input signal and the second output signal is limited to a minimum value equal to the given maximum value of the input signal. The two output signals are subtractively combined and the resultant signal is applied to the control electrode of the CRT to vary the beam intensity.

3,711,643

APPARATUS FOR REPRODUCING VIDEO INFORMATION IN SLOW MOTION

Koichiro Kurahashi; Masanori Nakada, both of Amagasaki; Koichi Nishimura, Kamakura, and Masaaki Abe, Kyoto-fu, all of Japan, assignors to Mitsubishi Electric Corporation, Tokyo, Japan

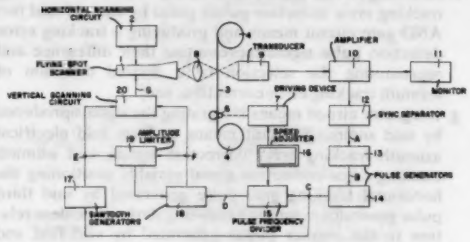
Filed Nov. 5, 1970, Ser. No. 87,076

Claims priority, application Japan, Nov. 7, 1969, 44/89091

Int. Cl. H04n *5/36*

U.S. Cl. 178—7.2 **5 Claims**

An apparatus for reproducing video information recorded on a film by use of a flying spot scanner. A particular sawtooth waveform signal is used for vertical scanning of the film so that slow motion reproduction is provided. The particular sawtooth signal is composed from a first sawtooth signal produced



by synchronizing a synchronizing mark recorded upon the recording media and a second sawtooth signal produced by frequency pulse dividing in synchronism with the first sawtooth signal.

3,711,644

AUTOMATIC DIAPHRAGM CONTROL APPARATUS FOR IMAGE TUBE

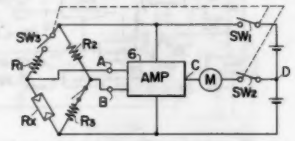
Yasuo Ishiguro, Tokyo, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-To, Japan

Filed Sept. 17, 1971, Ser. No. 181,447

Claims priority, application Japan, Sept. 18, 1970, 45/92828

Int. Cl. H04n *5/26*

U.S. Cl. 178—7.92 **3 Claims**



An automatic diaphragm control apparatus for image tube comprising a diaphragm means for controlling the amount of light incident to the light-receiving plane of an image tube, a photoconductive cell for receiving a part of the light having passed through the diaphragm means, a Wheatstone bridge circuit including the photoconductive cell in one of the branches thereof, a servo-motor adapted to be driven by the unbalanced voltage occurring in the bridge circuit and assigned for operating the diaphragm means, and a switch means interlocked with the power switches and adapted to act to momentarily elevate - prior to the opening of the power switches - the potential of one of the two output terminals of the bridge circuit to a level exceeding that of the potential of the other of the output terminals, the apparatus being operative so that, whenever the power switches are opened, the diaphragm means is always held at its minimum diaphragm aperture position, preventing the light-receiving plane of the image tube from sustaining any damage from burning caused by the intensive ambient light incident towards this light-receiving plane.

3,711,645

METHOD AND APPARATUS FOR CODING MESSAGES

Kurt Ehrat, Zurich, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Nov. 23, 1970, Ser. No. 91,790

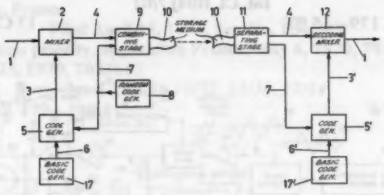
Claims priority, application Switzerland, Nov. 29, 1969, 17736/69

Int. Cl. H04l *9/02*

U.S. Cl. 178—22 **14 Claims**

A method and apparatus for coding messages is provided comprising coding the clear information by an encoding pro-

gram generated by a secret basic code and modified by selected parts of a non-secret supplementary code, the coded information be recorded together with the whole of the sup-



plementary code on a common record medium. The selection of parts of the supplementary code is controlled by the secret basic code.

3,711,646

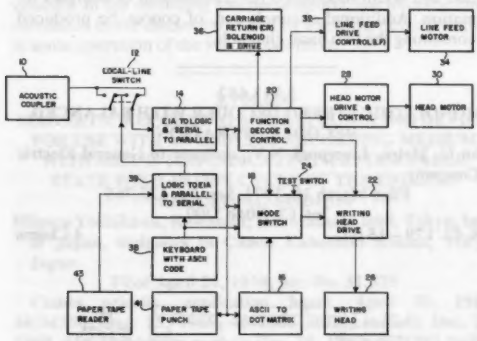
SYSTEM AND METHOD FOR PRINTING ALPHA-NUMERICS AND GRAPHICS

Everette E. Vermilion, Seattle; Eugene B. Seeley, Redmond, and Malcolm D. Lefcort, Seattle, all of Wash., assignors to Sector Corporation, Bellevue, Wash.

Filed Jan. 25, 1971, Ser. No. 109,098

Int. Cl. H04l *15/24*

U.S. Cl. 178—25 **15 Claims**



System and method for handling a plurality of electronic signals representing both alpha-numeric characters and graphics data. The coded alpha-numeric bits are directed to a decoder for conversion to a dot matrix and then to a writing head for printing on electrosensitive paper. The coded graphics bits are not relayed to the decoder but instead are transmitted to the writing head for direct print out on the electrosensitive paper. A control circuit monitors the incoming bit stream to shift the terminal between alpha-numeric and graphics printing as the arriving data pulses require.

3,711,647

CIRCUIT FOR INTERCONNECTION OF TELEPHONE AND RADIO-TELEPHONE NETWORKS

Marcel-Louis Boyer, Chatillon, France, assignor to C. I. T.-Compagnie Industrielle Des Telecommunications, Paris, France

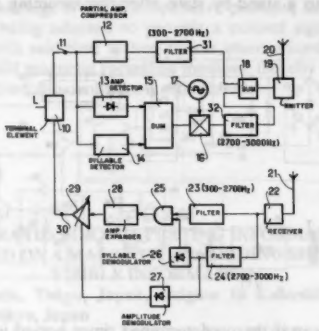
Filed Dec. 22, 1970, Ser. No. 100,648

Claims priority, application France, Dec. 23, 1969, 6944622

Int. Cl. H04b *3/20*; H04m *11/00*

U.S. Cl. 179—2 E **16 Claims**

Improvement in equipment used for making a telephone connection comprising a path on conductors and a radio path, such equipment being made less sensitive to parasitic disturbances due to a great reduction in the band required for



transmitting a control signal supplied by an envelope detector and a syllabic detector.

3,711,648

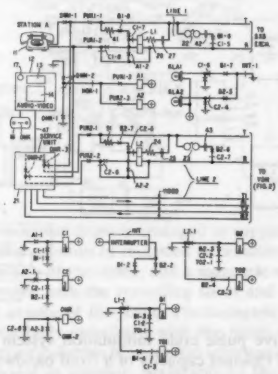
COMMUNICATION SYSTEM PROVIDING COMBINED AUDIO-VIDEO SERVICE

Wiley Whitney, 2829 N.E. 33rd Court, Apt. 603, Fort Lauderdale, Fla.

Filed June 1, 1971, Ser. No. 148,637

Int. Cl. H04m *11/08*

U.S. Cl. 179—2 TV **9 Claims**



A communication system for combined audio-video service utilizes at the subscriber's station two separate line circuits, one being the normal audio-only line to the telephone central office and the other, a special six-wire line, extending from the premises to a video switching network and providing both audio and video signals and transmission on all audio-video calls both incoming and outgoing. The video switching network provides switching facilities for combined audio-video calls exclusively for combined service subscribers in the area.

3,711,649

CONTROLLER DEVICE OF AN AUTOMATIC TELEPHONE ANSWERING APPARATUS

Shizuo Ando, Katsushika-ku, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 9, 1971, Ser. No. 114,017

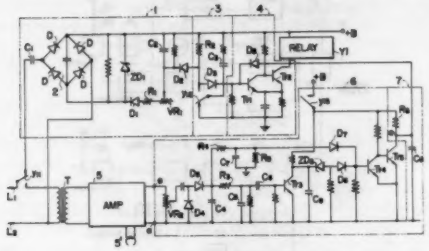
Claims priority, application Japan, Feb. 10, 1970, 45/11087

Int. Cl. H04m *1/64*

U.S. Cl. 179—6 R **5 Claims**

The invention pertains to a controller device for use with an automatic telephone answering apparatus whereby an auto-

matic answering operation is activated and remains activated to record an incoming message as long as the message arrives within a predetermined timer period. The apparatus is returned to a stand-by state after the incoming message is



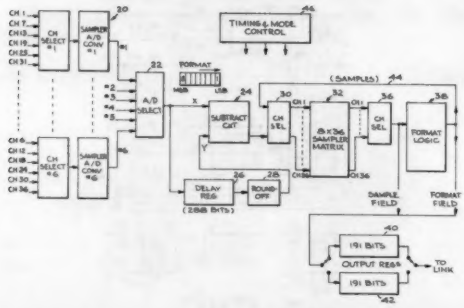
finished even if the predetermined timer period is not over. When the predetermined timer period is over, the apparatus is returned to its stand-by state even if the incoming message is not complete.

3,711,650

ADAPTIVE PULSE CODE MODULATION SYSTEM

Thomas G. Kuhn, and Neil B. Seitz, both of San Diego, Calif., assignors to Logicon, Inc., San Pedro, Calif.

Filed Oct. 26, 1970, Ser. No. 83,692
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 BW **16 Claims**



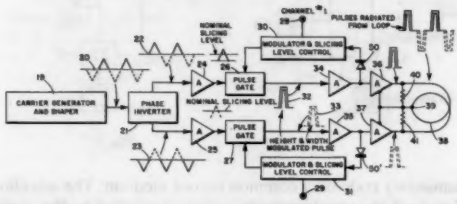
An adaptive pulse code modulation system useful for increasing the channel capacity of a fixed bandwidth communication link. Channel capacity is increased by reducing the redundancy normally characteristic of known non-adaptive pulse code modulation systems. In the subject adaptive system, the space in a fixed bit length frame is variable allocated to multiple channels on a frame-by-frame basis. That is, each channel is assigned only the number of frame bits actually required to transmit a representation of that channel's digital sample during a particular frame interval. The frame bit space is primarily allocated between a fixed bit length format field and a fixed bit length sample field. The format field is comprised of as may format numbers as there are channels. Each format number is of fixed bit length and expresses the bit position of the most significant "1" in the digital sample of a particular channel. Thus, for example, if 256 different analog levels are to be quantized for each channel, an 8-bit digital sample would be available from each channel. In this case, three bit format numbers are used so that a format number can identify any bit position within the 8-bit digital sample. The aforementioned sample field is comprised of a plurality of variable bit length sample numbers, each associated with a different channel. The sample numbers are comprised of bits which substantially match the bits less significant than the most significant "1" in the corresponding digital sample.

3,711,651

POLARITY SEPARATION MULTIPLEX

Raymond S. Connell, 200 Cardamon Drive, Edgewater, Md.

Filed Dec. 30, 1970, Ser. No. 102,594
Int. Cl. H04j *7/02*
U.S. Cl. 179—15 BT **17 Claims**



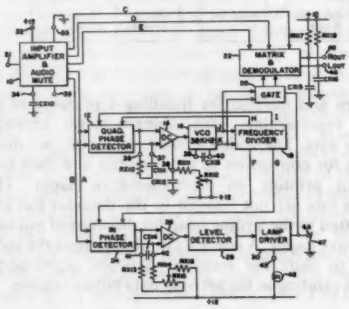
A method and apparatus for the transmission and reception of signals in separate communication channels by imposing modulation upon only that portion of a transmission carrier wave which lies above the average value, or only upon that portion which lies below the average value, or upon both portions independently but simultaneously, and then demodulating the two halves of the resulting signal envelope separately at the receiving end. The result of this technique is the creation of two channels selectable by polarity only. Transmission of the signal envelope from the transmitter to the receiver is accomplished by induction. Since the signal envelope is polarity modulated, the separate signal pulses may be amplitude and width modulated for transmission of complex information. Additional channels can, of course, be produced by combining the two basic channels.

3,711,652

MONOLITHIC STEREO DECODER WITH BALANCED DECODER OPERATION

John G. Metro, Liverpool, N.Y., assignor to General Electric Company

Filed March 10, 1971, Ser. No. 122,769
Int. Cl. H04h *5/00*
U.S. Cl. 179—15 BT **4 Claims**



A monolithic integrated circuit decoder for deriving stereophonically related audio frequency signals from a composite signal includes an input circuit for generating DC voltage-balanced signals including the composite signal for balanced, linear operation of the decoder. The decoder further includes a phase-locked loop having a temperature compensated current controlled oscillator and a frequency dividing dual rank flip-flop of simplified structure producing a staircase waveform on alternate half-cycles. The decoder also includes an audio mute circuit for muting the output of the decoder between stations.

3,711,653

SYSTEM FOR RECORDING AND PRESENTING AUDIO INFORMATION TO OCCUPANTS OF A VEHICLE

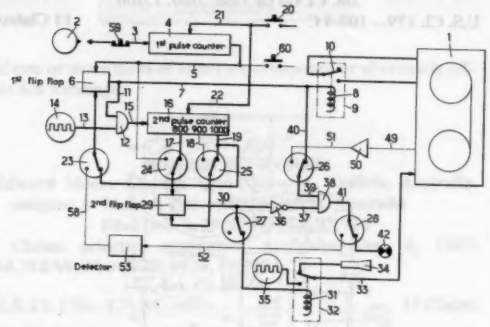
Pierre Emile Barbier, 17 rue de Docteur Decorse, Saint-Maurice, France

Filed April 15, 1971, Ser. No. 134,291

Claims priority, application France, May 6, 1970, 7016649; June 25, 1970, 7023652

Int. Cl. G11b *15/52, 23/36, 27/14*

U.S. Cl. 179—100.1 C 6 Claims



There is disclosed a system for recording and presenting information in an audio format to operators and passengers of vehicles. In the recording and presentation, the information is correlated to the distance traveled by a sensing device coupled to sense operation of the vehicle odometer.

3,711,654

MAGNETIC RECORDING AND REPRODUCING DEVICE FOR USE WITH AN ENDLESS RECORDING MEDIUM WITH MEANS FOR INDICATING A RECORDABLE STATE WITH-IN ONE CYCLE OF THE ENDLESS RECORDING MEDIUM

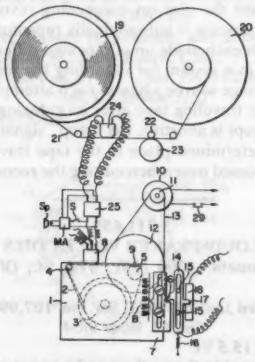
Minoru Yoshikawa, Kawasaki, and Masaaki Ishii, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed April 24, 1970, Ser. No. 31,575

Claims priority, application Japan, April 30, 1969, 44/34350; Dec. 25, 1969, 45/2388 (utility model); Dec. 25, 1969, 45/2389 (utility model); Dec. 25, 1969, 45/2391 (utility model); Dec. 25, 1969, 45/2392 (utility model); Dec. 25, 1969, 45/2393 (utility model)

Int. Cl. G11b *15/04*

U.S. Cl. 179—100.2 S 15 Claims



A magnetic record-reproduce device using an endless magnetic recording medium. This device provides a time setting means carried by the cartridge and corresponding to a length of time within one cycle of movement of the recording medium, and detection means connected to said time setting means when the cartridge is fitted in operative position, said detecting means being adapted to provide a control signal in accordance with said time setting means when recording is effected on said magnetic recording medium, thereby detecting whether recordable condition is established.

3,711,655

APPARATUS FOR CONVERTING INFORMATION RECORDED ON A MAGNETIC RECORDING SHEET INTO VISIBLE INFORMATION

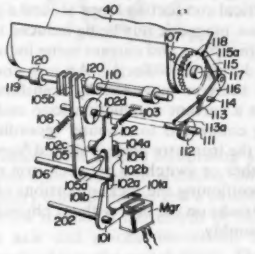
Isao Yamada, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Jan. 15, 1971, Ser. No. 106,645

Claims priority, application Japan, Jan. 24, 1970, 45/6436; Jan. 24, 1970, 45/6437

Int. Cl. G11b *5/08, 27/34*

U.S. Cl. 179—100.2 S 10 Claims



A rotatably mounted drum is arranged to support a recording sheet with the columns of recorded information extending substantially axially of the drum, and a magnetic reproducing head is cooperable with the recording sheet and is mounted for movement axially of the drum. Photoelectric transducer means are operatively associated with the drum and aligned with the respective columns of recorded information. Printing mechanisms, equal in number, preferably to the number of photoelectric transducer means are arranged in adjacent relation, and each printing mechanism is operative responsive to cojoint operation of a respective photoelectric transducer means and detection of an information bit by the reproducing head. In one embodiment of the invention, a light source is arranged within the drum adjacent an aperture in the drum wall, and photoelectric transducers are arranged circumferentially of the drum for consecutive activation by the light source as the drum rotates. The photoelectric transducers are connected in parallel with each other to the reproducing head and each transducer is connected to the operating means of a respective printing mechanism. In another embodiment of the invention, a single light source is operatively associated with a single photoelectric transducer, and the drum is formed with a series of apertures extending circumferentially thereof, in a common radial plane with the light source and the photoelectric transducer, each aperture being associated with a particular column of recorded information. the reproducing head and the photoelectric transducer are connected to the input of an AND circuit whose output is connected to a diode matrix which is controlled by a reset type flip-flop, and the diode matrix is connected to the operating means of the respective printing mechanisms.

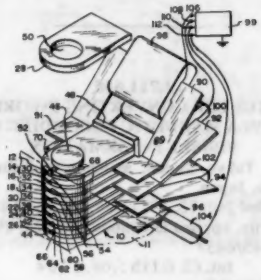
3,711,656

MULTI-CHANNEL MAGNETIC TAPE HEAD IN WHICH THE CORE IS SHIFTED FOR POSITIONING THE PICKUP PORTIONS

Ole K. Nilssen, Barrington Hills, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Int. Cl. G11b *5/16, 5/28*

U.S. Cl. 179—100.2 C **4 Claims**



A laminated multi-channel magnetic tape head apparatus has alternate lamina of copper and iron, with the iron lamina having gaps for recording/reproducing separate tape channels of multi-channel tapes. A copper insert and suitable connectors form electrical conducting loops around a portion of each magnetic lamina, magnetic flux being induced in the magnetic lamina during recording and current being induced in the conducting loops during reproducing. An iron core piece with a coil mounted thereon magnetically transfers an electrical signal between a current conduction loop and the coil, with the coil being connected to a sound recording/reproducing system. Either the iron core piece is shifted from one magnetic lamina to another or switching between iron core pieces occurs thereby positioning the pickup portions of the tape head to the various tracks on the tape without physically moving the entire head assembly.

3,711,657

CONTROL DEVICE FOR A TAPE RECORDER FOR DETECTING THE BEGINNING OF A DESIRED PROGRAM

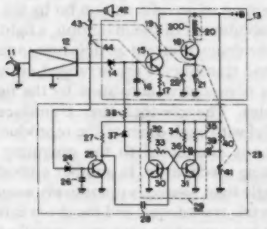
Takeharu Niioka; Noriji Itoh, both of Yokohama, and Hideyasu Ishigo, Kawasaki, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed May 5, 1971, Ser. No. 140,322

Claims priority, application Japan, May 8, 1970, 45/38678

Int. Cl. G11b *15/18, 27/22*

U.S. Cl. 179—100.2 S **6 Claims**



A control device for a tape recorder comprising means for detecting no-signal portions of a magnetic recording tape disposed between adjacent program portions, and means for either stopping the fast forward or rewind of the tape upon receipt of signals showing said detection or for continuing said fast forward or rewind as desired even when there is detected the aforesaid no-signal portion, thereby controlling a fast forward or rewind mechanism by effecting said stoppage of continuation through the actuation of an electromagnetic plunger according to whether a pair of transistors of the control device are turned on or off.

3,711,658

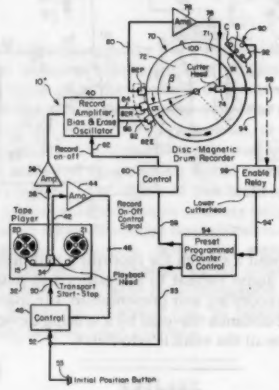
APPARATUS AND METHOD FOR CUTTING RECORD DISCS

Donald H. Ward, Glen Ellyn, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 24, 1969, Ser. No. 887,852

Int. Cl. G11b *3/00, 5/86, 15/06*

U.S. Cl. 179—100.4 C **11 Claims**



Apparatus and method for production of record discs, of particular utility in the production of permanent record phonograph discs for use with a teaching machine of the U.S. Pat. No. 3,483,633 type. A source (tape player) for messages to be repeated on the disc is provided, that can be activated to deliver a single message on command, which single messages are successively transferred from the source to a magnetic tape loop affixed to the turntable of a disc cutting lathe, and from that tape loop, repeatedly to the cutting head of the lathe and thus, repeatedly, to the disc. An automatic counter and programming unit is provided which counts the number of times that the message has been cut on the disc and, after a preselected number of cuttings, activates the tape machine, erases the previous message on the tape loop and records a second message thereon from the source which, in turn, is repeatedly cut into the disc on succeeding revolutions of the turntable. The process is automatically repeated to cut a succession of bands each made up of repeated different messages. Also disclosed in a system for recording the messages on the tape of the message source wherein each attempted message is recorded on the traveling tape after an indexing "stop" signal and, if the attempt is abortive, the "stop" signal is erased as it reaches a predetermined place in the tape travel mechanism and thus later passed over when cutting the record disc.

3,711,659

LOUDSPEAKER VOICE COILS

Gerald B. Bremseth, 5700 N.W. 67th St., Oklahoma City, Okla.

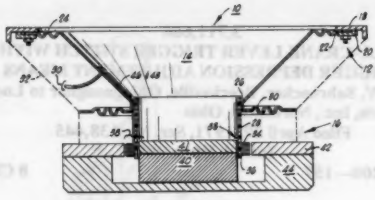
Filed Jan. 20, 1971, Ser. No. 107,994

Int. Cl. H04r *9/04*

U.S. Cl. 179—115.5 VC **2 Claims**

An improvement in the method and manner of constructing a loud speaker voice coil, such improvement consisting of utilizing conductive metal foil as the wound element for sup-

ported positioning and reciprocal movement within an associated magnetic air gap; such a metallic foil coil may consist

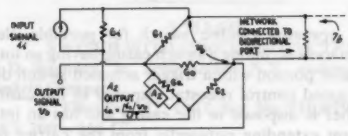


of one or more turns of either superimposed or alternately offset foil windings.

3,711,660
HYBRID NETWORKS

Edward Moore Cherry, Glen Waverly, Victoria, Australia, assignor to Monash University, Victoria, Australia

Filed Dec. 1, 1970, Ser. No. 93,926
Claims priority, application Australia, Dec. 4, 1969, 64,792/69; March 26, 1970, PA0751/70
Int. Cl. H04m *1/58*
U.S. Cl. 179—170 NC **17 Claims**

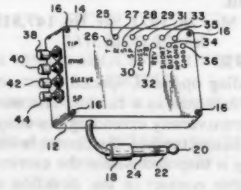


The disclosure of the present specification relates to a bridge network suitable for use as a telephone hybrid wherein the bridge network includes at least two bridge networks in cascade, one bridge having arms which include the input and bidirectional ports of the hybrid and the nominal balancing impedance, the other sub-bridge network having arms which include the output port of the hybrid and the output circuit of an amplifier having an output signal characterized by a product of the signal applied to the input port of the hybrid and the signal from the output of the hybrid, the output circuit thereby being isolated from arms in the output port and from all other arms of the bridge which include reactive elements or characteristics.

3,711,661
DISTRIBUTING TERMINAL ASSEMBLY TEST APPARATUS

Jim C. Garrett; Robert H. Johnson, and Jack Shelton, all of 3300 East Spring St., Long Beach, Calif.

Filed Feb. 5, 1971, Ser. No. 112,925
Int. Cl. H04m *3/22*
U.S. Cl. 179—175.1 R **8 Claims**

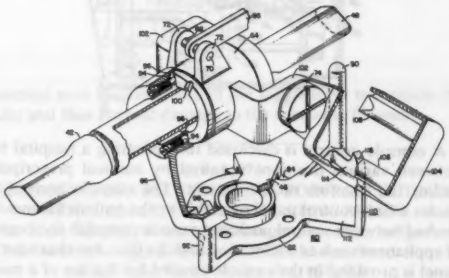


Test unit apparatus for use relating to distribution terminal assemblies employed in connection with telephone trunks under test. Testing is performed through the use of voltage-sensing probes which monitor the potential present on trunks characterized by either three or four leads. Comprehensive testing of the wiring of the equipment associated with the trunk being tested reveals all commonly encountered trunk wiring defects, visual indications of malfunctioning circuits being provided by means of plural lamps each having a distinctive function.

3,711,662
ELECTRIC DISCONNECT SWITCH HAVING IMPROVED OPERATING MECHANISM

Edmund W. Kuhn, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 17, 1972, Ser. No. 218,331
Int. Cl. H01h *31/00*
U.S. Cl. 200—48 A **8 Claims**

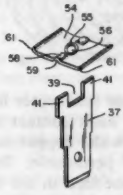


An electric disconnect switch comprising a switch blade movable between open and close positions with respect to a relatively stationary contact means and a switch blade operating mechanism for rotational movement of the switch blade about its own axis and pivotal movement about an axis generally perpendicular to the switch blade. The switch blade operating mechanism provides for rotation of the blade about its longitudinal axis in sequence with pivotal movement of the blade about an axis perpendicular to the longitudinal axis of the switch blade with no overlap of the movement.

3,711,663
CENTER-OFF FLOATING CONTACT FOR ELECTRIC SWITCHES

Richard W. Sorenson, West Hartford, Conn., assignor to Carling Electric, Inc., West Hartford, Conn.

Filed Aug. 13, 1971, Ser. No. 171,558
Int. Cl. H01h *13/28*
U.S. Cl. 200—67 G **5 Claims**



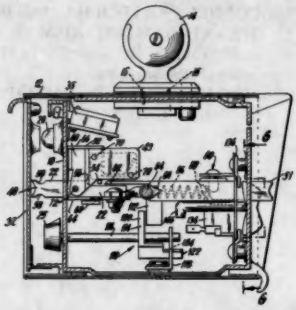
A free-floating contact lever for an electric switch wherein the switch actuator and the lever cooperate to stabilize said lever in a center-off position on the upper edge of a flat, vertical terminal yoke.

3,711,664

CONSOLE CONTROL FOR BEDS WITH INTER-LOCKING SWITCH OPERATORS

Roland A. Benoit, Danielson, Conn., and Joseph R. Tripodi, Brooklyn, N.Y., assignors to Royal Metal Corporation, New York, N.Y.

Filed Feb. 18, 1970, Ser. No. 12,252
Int. Cl. H01h 9/26, 35/00
U.S. Cl. 200—5 R 14 Claims



A console control is disclosed for operating a hospital bed between various positions required by medical prescription and/or the comfort of the patient. The console control includes a first control panel available to the patient for moving the bed between several positions or to accomplish the control of appliances such as a television and the like. Another control panel is provided in the console control for the use of a medical attendant to accomplish bed position control as well as control of the various appliances as may be operated from the console. The medical attendant's control panel is dominant and includes means to inactivate selectively one or more controls located on the patient's control panel. Locking means are provided for the medical attendant's control panel to prevent unauthorized access to the console control.

3,711,665

CONTACT WITH ARC PROPELLING MEANS EMBODIED THEREIN

Rolf Dethlefsen, New Berlin, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Feb. 16, 1971, Ser. No. 115,594
Int. Cl. H01h 33/66
U.S. Cl. 200—144 B 5 Claims

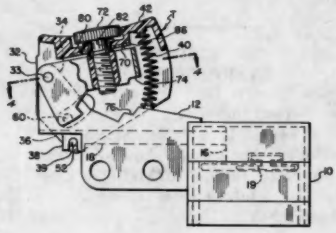
In a vacuum type circuit interrupter having a pair of relatively movable contacts, each contact comprises a contact stud to which a relatively wider copper contact body or disk is attached. Magnetically permeable, highly resistive arc propelling means are embedded in the contact body. These means comprise a circular center portion of the same or larger diameter as the contact stud and from which (or from near which) a plurality of spirally shaped arms or vanes radiate towards the periphery of the contact. The arc propelling means create a looped current path in the contact body during contact closed position to intensify outwardly radiating magnetic forces upon contact opening to improve arc rotation thereby aiding in arc extinguishment.

3,711,666

BELL-CRANK LEVER TRIGGER SWITCH WITH TRIGGER DEPRESSION ADJUSTMENT MEANS

Edward V. Sahrbacker, Brecksville, Ohio, assignor to Lucerne Products, Inc., Northfield, Ohio

Filed April 29, 1971, Ser. No. 138,445
Int. Cl. H01h 9/06
U.S. Cl. 200—157 8 Claims



A trigger operated electric switch for portable electric motor-driven tools including a switch casing having an integral extended frame portion with a trigger actuated switch device including a speed control rheostat disposed in the casing. A contact carrier is disposed in the casing and has an integral elongated arm extending outwardly from the carrier in the direction of the frame portion. The contact carrier is disposed in the casing and frame portion for reciprocation therein along the longitudinal axis of the carrier. The contact carrier contains a portion of the switch device whereby reciprocation of the contact carrier actuates the switch device and the speed control rheostat. A bell-crank trigger is pivotally mounted at its apex on the free outer end of the frame portion above the outer end portion of the arm for rotation in the longitudinal vertical plane of the carrier. One end of the bell-crank trigger is pivotally connected to the outer end of the arm. Bias means in the form of a compressed coiled spring is disposed between the frame portion and the outer end portion of the bell-crank trigger to bias the switch device to a first preselected position. Displacement of the outer end portion of the trigger against the action of the spring displaces the contact carrier to a second preselected position. Thus, the trigger is disposed at substantially a right angle to the switch device. Means are provided for adjusting the distance the trigger may be depressed, thereby selectively controlling the speed control rheostat.

3,711,667

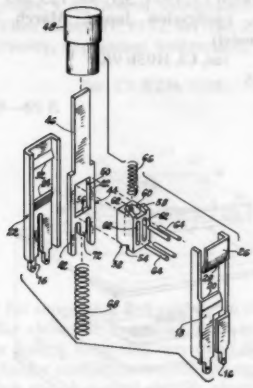
SPRING LOADED PUSHBUTTON SWITCH

Guy M. Farrell, Elmhurst, Ill., assignor to Chicago Switch, Inc., Chicago, Ill.

Filed May 28, 1971, Ser. No. 147,818
Int. Cl. H01h 3/12
U.S. Cl. 200—159 R 12 Claims

A switch including opposed, spaced apart contacts, and a movable contact mounted in a carrier. The movable contact may comprise a transversely extending pin adapted to bridge the spaced apart contacts when the carrier is moved into one position. A spring is disposed within the carrier for normally biasing the movable contact in the direction of the spaced apart contacts whereby engagement of the movable contact with the spaced apart contacts will impart a force to the movable contact in opposition to the force of the resilient means. A

pair of pins may be employed to provide redundancy, and pins may be located at opposite ends of the carrier with a separate



set of spaced apart contacts being bridged by one or more separate pins.

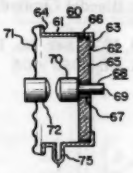
3,711,668

SWITCH WITH SURGE PROTECTION

John D. Harnden, Jr., Schenectady, N.Y., assignor to General Electric Company

Filed Dec. 22, 1971, Ser. No. 210,079

U.S. Cl. 200—166 C **9 Claims**



An insulating member of metal oxide varistor material separates the two conductive parts of a hermetically sealed enclosure to which the electrodes of the switch are attached. The metallic oxide varistor material has a voltage versus current characteristic such that when normal voltage appears across the electrodes, a high impedance is presented by the insulating member and when voltages in excess of normal voltage appears across the electrodes, a rapidly decreasing impedance is presented by the insulating member, thereby limiting the voltage which is sustainable across the electrodes of the switch.

3,711,669

SWITCH HAVING A SHOCK-PROOF LIGHTED TOGGLE SWITCH

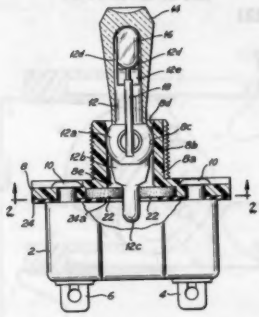
John J. Keranen, Sussex, Wis., assignor to Cutter-Hammer, Inc., Milwaukee, Wis.

Filed Jan. 28, 1972, Ser. No. 221,737

Int. Cl. H01h *9/18*

U.S. Cl. 200—167 A **6 Claims**

A switch having a lamp inside its toggle lever to serve as an indicator of the operating condition. An incandescant lamp having high visibility at some distance is preferred over neon lamps although it is more susceptible to damage under snap-action shock. To insure long life, a pair of shock absorbers are



mounted near the lower end of the toggle lever to cushion the latter and thus prevent damage to the thin lamp filament.

3,711,670

SELECTING DEVICE FOR CROSS-POINT SELECTORS WITH CAM CONTACT ACTUATING MEANS

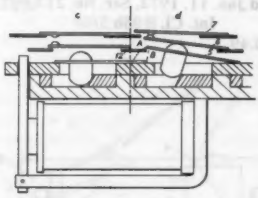
Arne Kurt Dietsch, Skonstaholmsvagen, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Nov. 17, 1971, Ser. No. 199,469

Claims priority, application Sweden, Dec. 30, 1970, 17741/70

Int. Cl. H01h *67/00, 3/42*

U.S. Cl. 200—175 **5 Claims**



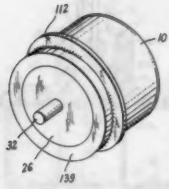
A selecting device for cross-point switches which have a first group and a second group of parallel bars crossing each other. The bars are individually displaceable between two outer positions and in the crossing points there are contact means and selecting elements for operating the contacts. Each bar included in said first group activates upon displacement selecting elements located along said bar and each bar included in the outer group activates upon displacement by means of said selecting elements, contact means located in the crossing point. Each of the selecting elements includes a leaf spring fastened at one of its ends on a bar in said second group and having at its free end a lifting stud projecting towards the bar in said first group. The bars of the first group have a sloping surface and said stud can slide on said surface and lift the leaf spring so as to operate the contact. The position of the sloping surface is such that a displacement of a bar in one of said groups is necessary to bring said sliding surface into engagement with said stud and a displacement of a bar in the second group is necessary to bring the stud to slide along said surface and to lift the contact.

3,711,671

MERCURY BUTTON CLOSURE

Ralph L. Graves, East Greenwich, R.I., assignor to General Electric Company

Filed Jan. 29, 1971, Ser. No. 110,893
Int. Cl. H01h 29/00
U.S. Cl. 200—221 1 Claim



A mercury button for a mercury switch is provided with improved closure of the steel shell thereof. Prior thermal stresses are reduced and practically eliminated to reduce fracture of a glass insulator portion of the steel shell closure by generating welding heat uniformly about the metal ring enclosing the annular glass insulator.

ERRATUM

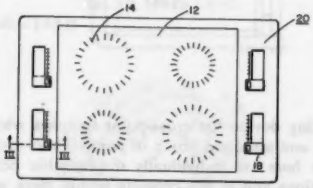
For Class 219—131 WR see:
Patent No. 3,711,058

3,711,672

MAGNETICALLY COUPLED CONTROL FOR APPLIANCE

William C. Moreland, II, Export; William R. Cobb, Murrysville, both of Pa., and Charles R. Tyke, Lexington, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 11, 1972, Ser. No. 217,007
Int. Cl. H05b 5/08
U.S. Cl. 219—10.49 8 Claims



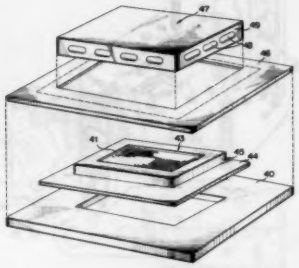
A magnetically coupled control arrangement especially adapted for an appliance, such as a cooking device subject to being dirtied from cooking spills, has a user-operated control member knob with multiple alternating magnetic poles on its underside adapted to be placed against a control area on a substantially non-magnetic sheet to register with a following member, having multiple alternating magnetic poles complementary to the poles of the control members, in the space underlying the control area, with the follower member being linked to adjustable means for controlling the operation to be carried out, such as the cooking operation. The arrangement is such that the user-operated control member may be removed completely from the control area to facilitate cleaning that part of the device.

3,711,673

DOORS FOR ELECTRONIC OVENS

Sadao Takeda, Kanagawa; Kaoru Mitsudome, and Tetsuo Hashimura, both of Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed March 17, 1971, Ser. No. 125,285
Claims priority, application Japan, March 20, 1970, 45/26585 (utility model)
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 9 Claims



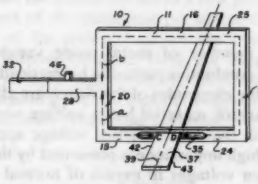
A door for use in an electronic oven comprises a metal frame having an opening therein, a metal plate having a plurality of small perforations and secured to the frame to close its opening, and a transpatent cover plate secured to the frame to cover at least a major portion of the outer surface of the perforated metal plate so as to define a vent passage for exhausting the steam generated from the foodstuff being cooked.

3,711,674

T-RING MICROWAVE DRYING APPARATUS

Lambertus Admiraal, Coquitlam, British Columbia, Canada, assignor to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada

Filed June 3, 1971, Ser. No. 149,548
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 16 Claims



Apparatus for drying moisture-laden dielectric materials by microwave energy including a waveguide system shaped to direct microwave energy from a microwave generator to opposite sides of material to be dried. The waveguide system is in the form of a closed ring and is designed so that all microwave energy reflected by the material is directed back thereto and cannot reach the generator. The apparatus can include means for controlling the output of the generator in accordance with the moisture content of the portion of the material exposed to the microwave energy. This includes means for measuring energy transmitted through the material, and means for controlling the output of the generator inversely relative to the level of the transmitted energy.

3,711,675

APPARATUS FOR HOLDING AND GUIDING AN ELONGATED ELECTRODE IN ELECTRO-EROSION MACHINING

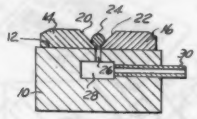
Roger Girardin, Lausanne, Switzerland, assignor to Ateliers des Charmilles, S.A., Geneva, Switzerland

Filed March 27, 1972, Ser. No. 238,229

Claims priority, application Switzerland, March 31, 1971, 4680/71

Int. Cl. B23k 1/08

U.S. Cl. 219—69 E 9 Claims



A holder for supporting and guiding an elongated and relatively slender electrode in an electro-erosion apparatus, for example for drilling holes of a very small diameter in a workpiece. The holder comprises essentially a straight edge surface against which the elongated slender electrode is applied by fluid pressure. The fluid pressure may be the atmospheric pressure, conduit means being provided proximate the straight edge surface for exhausting atmospheric air by connection to a suction means, or the fluid may be any other fluid under pressure for exerting a force on one side of the electrode to apply it against the straight edge surface.

3,711,676

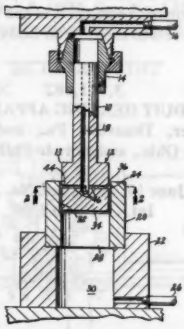
DIELECTRIC-FLOW-DIRECTING EDM ELECTRODE

John R. Witzel, Milford, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Oct. 4, 1971, Ser. No. 185,963

Int. Cl. B23p 1/08, 1/04

U.S. Cl. 219—69 D 9 Claims



An EDM electrode for directing dielectric flow to the gap, the electrode having a plug-shaped body with an axially displaceable machining end-face and including a high pressure biased circumferential cannelure in the body which is in fluidic communication with a fluid supply for introducing fluid to the gap and a sub-atmospheric pressure system for withdrawing the fluid from the gap.

3,711,677

AUTOMOBILE WINDSHIELD AND BACKGLASS REMOVAL TOOL

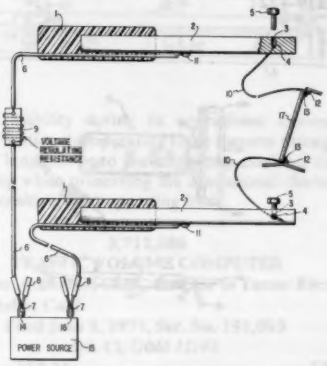
W. Wayne Cummins, Jackson, Miss., assignor to Rubie Nell Little Howell, Jackson, Miss.

Filed March 11, 1970, Ser. No. 103,016

Int. Cl. H05b 1/00; B26d 7/10

U.S. Cl. 219—221 4 Claims

A tool for cutting an adhesive sealant of the type used for sealing automobile windshields and backglasses. An electrically heated music wire is employed for cutting the sealant. The cutting wire is held by and positioned between the outer ends of a pair of electrically conducting metallic shanks. The inner ends of the shanks are inserted into a pair of nonconducting handles which may be held by the hands while using



the tool. Electrical leads are electrically connected to the outer ends of the shanks at points remote from the handles whereby current does not pass through the inner ends of the shanks. A variable resistance is used to control the amount of electrical current flowing through the cutting wire.

3,711,678

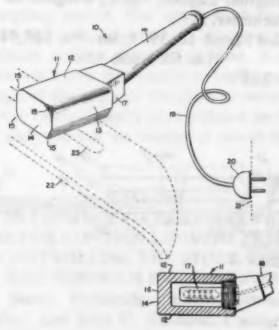
ELECTRIC SKI WAXER

Herbert Kuus, 30 Deanvar Avenue, Scarborough, Ontario, Canada

Filed Feb. 1, 1971, Ser. No. 111,452

Int. Cl. H05b 1/00

U.S. Cl. 219—227 1 Claim



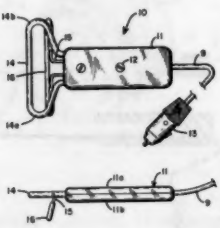
A tool for applying wax to the underside of a ski, the device comprising a hollow block of aluminum fitted with an electric heater therewithin, the heater being secured to a hollow handle through which an electric extension cord extends to communicate at one end with the heater and at its opposite end being provided with a male plug for inserting into an electric outlet socket; the block when being properly heated being particularly suitable for softening and applying the wax; and the block having four parallel corner edges each one of which is of a different shape or size of shape so to be adaptable to get into various shaped ski grooves.

3,711,679

WINDSHIELD DE-ICER

George L. Moschkau, St. Paul, Minn., and Arlin Lee Miller, New Richmond, Wis., assignors to Sterling Products Company, Inc., St. Paul, Minn.

Filed Feb. 11, 1971, Ser. No. 114,561
Int. Cl. A47l *1/06*; H05b *1/00*
U.S. Cl. 219—227 2 Claims



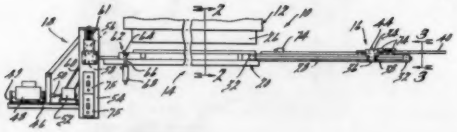
A windshield cleaning device for removing ice from a vehicle windshield includes a handle provided at one end with an electric heating element and a wiping member. The heating element is disposed transversely of the handle axis and includes an elongated substantially straight cylindrical heating section for melting ice on the windshield and for scraping ice off the windshield. The wiping member is positioned transversely of the handle and projects substantially at right angles to the heating element and includes a cylindrical rod having a flexible squeegee member thereon. The heating element is energized through a connector adapted to be plugged into the lighter receptacle on the vehicle.

3,711,680

WORKPIECE TRANSFER APPARATUS

C. Earl Bennington, Lapeer, Mich., assignor to Voplex Corporation, Rochester, N.Y.

Filed March 18, 1971, Ser. No. 125,545
Int. Cl. H05b *1/00*
U.S. Cl. 219—243 18 Claims



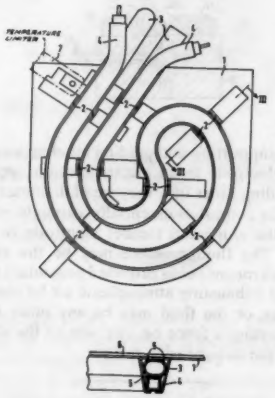
An apparatus for transferring workpieces to and from a machine adapted to perform a manufacturing operation thereon, the apparatus including means defining a workpiece transfer path to and from the machine, shuttle means for moving workpieces longitudinally along the path into registry with the machine, with longitudinal movement of workpieces along the path in response to movement of the shuttle means causing preceding workpieces to be moved out of registry with the machine and toward a discharge area, and means for removing workpieces from the discharge area in a manner so as to prevent interference with the transfer of successive workpieces into registry with the machine.

3,711,681

ELECTRIC THRU-FLOW HEATER FOR USE WITH COFFEE MACHINES AND THE LIKE

Udo Leuschner, and Wolf-Dieter Schubert, both of Traunreut, Germany, assignors to Siemens-Electrogerate GmbH, Berlin and Munchen, Germany

Filed May 11, 1971, Ser. No. 142,287
Claims priority, application Germany, May 14, 1970, P 20 23 598.7
Int. Cl. H05b *1/02*; A47j *31/00*; F24h *1/14*
U.S. Cl. 219—303 3 Claims



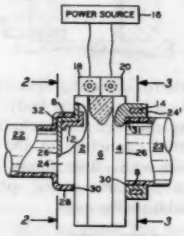
An electric thru-flow heater for coffee vessels includes a carrier plate with integral clamping means depending from its underside, serving to positively position and fix a water tube — tubular heating body combination. A sheet member on top of and coincidental with the carrier plate cooperates therewith to receive and warm a coffee vessel deposited thereon. Temperature limiting means connected to the carrier plate control the energy input levels to the tubular body.

3,711,682

CONDUIT HEATING APPARATUS

Milton L. Chester, Titusville, Pa., and Billy J. Sanders, Oklahoma City, Okla., assignors to Phillips Petroleum Company

Filed June 17, 1971, Ser. No. 154,134
Int. Cl. H05b *1/00*
U.S. Cl. 219—535 6 Claims



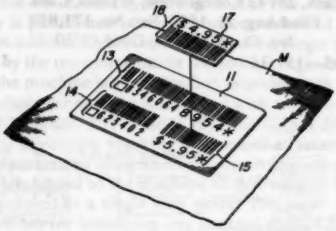
An apparatus for heating portions of first and second separate plastic conduits. The apparatus has first and second heating heads each having a heating face operably connected to respective first and second separate heating elements. An insulating element is positioned between the first and second heating heads and separate controls are connected to the heating elements for separately controlling the temperature of each heating face.

3,711,683

RE-PRICE MARKING METHOD AND RECORD MEMBER

Paul H. Hamisch, Sr., Dayton, Ohio, assignor to The Monarch Marking System Company, Dayton, Ohio

Filed Jan. 8, 1971, Ser. No. 104,878
Int. Cl. G06k *19/00*; G09f *1/02*
U.S. Cl. 235—61.12 N 16 Claims



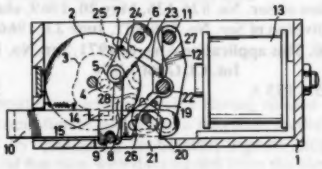
There is disclosed a re-price marking method and record member. Using one record member such as a ticket, tag or label, fields of data, such as inventory control, style and price data fields are printed on the one record member. Each field has both binary code machine readable data and human readable data. Re-price marking is accomplished by printing a new price in both binary code machine readable price data and human readable price data on another record member, and adhesively securing the other record member over the price field on the one record member but not over the other field or fields on the one record member. The result is a re-price marked binary code and human readable record member.

3,711,684

RESETTING DEVICE FOR THE DIGITAL ROLLS OF COUNTERS

Alfred Zielke, Peine, Germany, assignor to ELMEG Electro-Mechanik GmbH, Peine, Germany

Filed May 5, 1971, Ser. No. 140,514
Claims priority, application Germany, May 15, 1970, P 20 23 80.8
Int. Cl. G06c *15/42*
U.S. Cl. 235—144 HC 8 Claims



The invention relates to a resetting device for the cipher rolls of counters with transmission pinions which are disconnected during the return of the cipher rolls by resetting fingers acting upon cams of the cipher rolls. The axle shaft of the transfer pinions is supported in slotted holes stationary in relation to the cipher roll axes.

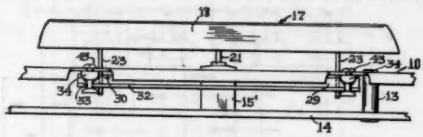
3,711,685

KEYBOARD SWITCH ACTUATOR

Raymond G. Castle, Waukegan, Ill., assignor to Cherry Electrical Products Corporation, Waukegan, Ill.

Filed Dec. 27, 1971, Ser. No. 212,137
Int. Cl. G06c *7/02*, *25/00*
U.S. Cl. 235—145 R 8 Claims

A keyboard switch actuator in the form of a so-called spacer bar commonly utilized in data processing machines, computers, and electric typewriters, all of which require the actuation of an associated electrical switch. The actuator in this application is a spacer bar normally rectangular in shape and of a size greater than other keys associated with the apparatus. This type of actuator must be constructed so as to maintain



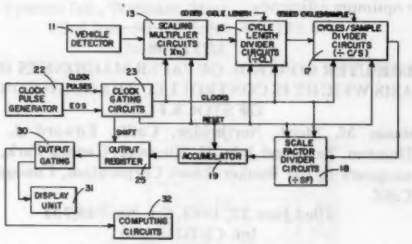
longitudinal stability during its operational movement by equally distributing the operating force thereon throughout its longitudinal length so as to prevent tilting, cocking, and oscillatory binding while preserving the operational characteristic of a highly sensitive, light operating force.

3,711,686

TRAFFIC VOLUME COMPUTER

Peter F. Apitz, Fullerton, Calif., assignor to Tamar Electronics, Inc., Anaheim, Calif.

Filed June 8, 1971, Ser. No. 151,093
Int. Cl. G06f *15/48*
U.S. Cl. 235—150.24 13 Claims



The output of a vehicle detector which provides an indication for each vehicle passing a point on a roadway is multiplied by an appropriate scaling factor. This scaled signal is then divided by factors in accordance with a predetermined sample cycle length and the number of sampling cycles used to form a complete sampling period. The signal so derived is then divided by a selected scale factor which represents a standard or reference vehicle volume per unit of time. A signal is thus derived which represents the volume of traffic per unit of time as a percentage of the selected standard or reference volume, this information being digitally accumulated during each sampling period and read out for display or use in computing circuits.

3,711,687

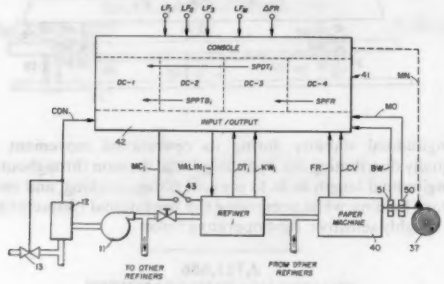
COMPUTER CONTROL OF PARALLEL PAPER MILL REFINERS FOR CONTROLLING THE FREENESS OF STOCK BY CONTROLLING THE STOCK TEMPERATURE RISE THROUGH EACH REFINER

Thomas M. Stout, Northridge, Calif.; Edward J. Smith, Houston, Tex., and John H. Hiestand, Canoga Park, Calif., assignors to the Bunker-Ramo Corporation, Canoga Park, Calif.

Filed June 27, 1968, Ser. No. 740,730
Int. Cl. D21f *1/08*
U.S. Cl. 235—151.1 51 Claims

Apparatus is disclosed for controlling freeness of stock from parallel refiners by controlling the rise in temperature of stock through each refiner. The Δ T setpoint for each refiner is adjusted to compensate for: variations in consistency of stock; maximum power rating of the refiner; weighted average freeness of stock from all refiners; and the composite frheness of stock delivered to a paper machine. Error in the desired temperature rise of a given refiner is employed to control its disc

or plug operation. An on-line analyzer is employed to monitor composite freeness. Couch or flatbox vacuum is employed as an alternative measure of composite freeness, but only if intentional paper machine changes which would affect vacuum have not been made. Operator control of composite freeness



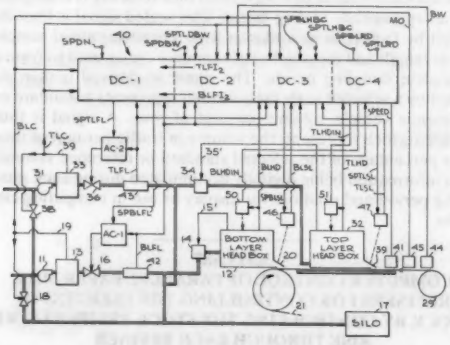
is also permitted. The composite freeness setpoint is adjusted to maintain a desired paper bursting strength. Power checks are made and instructions are automatically given to adjust flow rate to an individual refiner in order to keep it operating within its maximum power limit and to add or delete refiners for optimum efficiency.

3,711,688

COMPUTER CONTROL OF PAPER MACHINE IN WHICH BASIS WEIGHT IS CONTROLLED THROUGH CONTROL OF STOCK FLOW

Thomas M. Stout, Northridge, Calif.; Edward J. Smith, Houston, Tex., and John H. Hiestand, Canoga Park, Calif., assignors to the Bunker-Ramo Corporation, Canoga Park, Calif.

Filed June 27, 1968, Ser. No. 740,731
Int. Cl. D21f *1/06*
U.S. Cl. 235—151.1 **38 Claims**



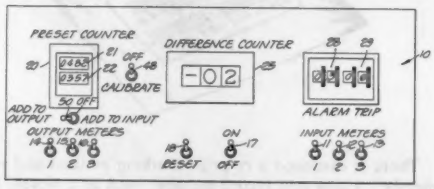
Apparatus is disclosed for controlling the basis weight of double-layer paper from a Fourdrinier machine by: comprising composite dry basis weight from total basis weight and moisture measurements; computing the dry basis weight of the top layer from the composite dry basis weight and the stock flow and consistency data of both layers; correcting the stock flow rate for the top layer to achieve a desired top layer dry basis weight value; and correcting the stock flow for the bottom layer to achieve a desired composite dry basis weight taking into consideration the correction made in the stock flow of the top layer. Composite dry basis weight changes due to changes in machine speed and stock consistency are anticipated and corrected by making a compensating change in stock flow for both layers. The flow rate of fiber onto the wire screen of the machine is controlled by computing headbox total flow setpoints from fiber flow data and desired headbox consistency, and adjusting the headbox slice position accordingly. Speed of the slice jet relative to the wire screen is controlled by controlling headbox head.

3,711,689

PIPELINE MONITORING SYSTEM

James E. Park, 20742 Collegewood, Walnut, Calif.

Filed Aug. 16, 1971, Ser. No. 171,859
Int. Cl. G01f *1/04*; G06f *15/20*
U.S. Cl. 235—151.34 **18 Claims**



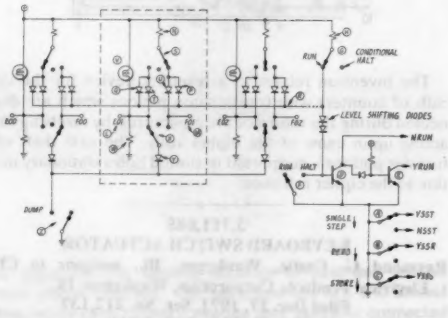
There is disclosed herein an electronic monitoring system for pipelines and the like utilizing counting techniques for determining the difference between fluid volume supplied into a pipeline and the fluid volume removed from the pipeline. An error factor is employed and, based upon the volume difference, provides compensation for normal difference between the input and output volume measuring devices. This error factor then compensates for the normal difference between input and output volume. Abnormal deviations can then be detected to determine fluid leaks and the like for actuating alarm and control circuits for providing an alarm and/or terminating fluid flow in the pipeline system. There is also disclosed herein the manner in which the present electronic system can be utilized for monitoring a pipeline system with multiple input meters or outputs meters. There is also disclosed herein methods for precisely determining the normal difference between input and output meters.

3,711,690

CALCULATOR AND TESTER FOR USE THEREWITH

Thomas E. Osborne, San Francisco, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 826,136, May 20, 1969, abandoned, which is a division of Ser. No. 559,887, June 23, 1966, Pat. No. 3,566,160. This application Aug. 6, 1971, Ser. No. 169,877
Int. Cl. G06f *11/04*
U.S. Cl. 235—153 A **38 Claims**



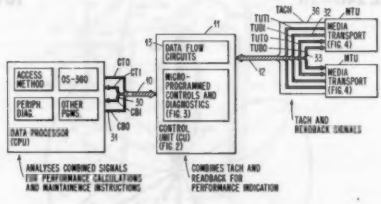
Internal control and subroutine logic transfers data between a keyboard input, a random access memory, and a plurality of flip-flop registers to perform arithmetic operations and transfers the results of these operations to a cathode ray tube output display. Power switching is employed in the internal con-

trol and subroutine logic so that the operating subroutines and instructions are supplied with power only when they are to be executed. When a random access memory cycle is required, the internal control logic automatically interposes it between the otherwise regularly recurring logic cycles. Encoded transfer vectors are stored and decoded by the subroutine logic to permit unrestricted subroutine returns. In the keyboard input two power supply returns are employed to define one bit of the keyboard encoder. The random access memory is partitioned into one portion addressed by a single bit in the address register and into another, larger portion addressed by the remaining bits in the address register. Each flip-flop of the machine is a J-K flip-flop provided with an adjustable threshold for noise immunity and with a high internal gain on the J-K inputs. The cathode ray tube output display is obtained by selectively blanking portions of a recurring pattern that is generated by integration in only two directions. A tester may be connected to the machine for allowing all subroutines to be operated in a single step mode. The tester is provided with switches for initializing any internal state of the machine or stopping normal execution under any prescribed conditions and with apparatus for accessing the random access memory.

3,711,691
PERIPHERAL DEVICE ANALYSIS

Richard C. Breitenbach, Boulder; Gene H. Edstrom, and James R. Keffeler, both of Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 13, 1971, Ser. No. 143,057
Int. Cl. G11b *27/00*
U.S. Cl. 235—153 A **58 Claims**



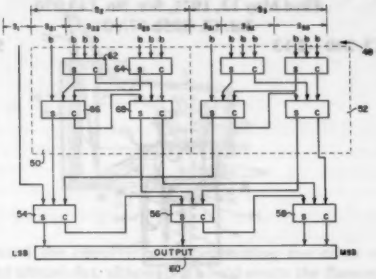
A computer peripheral device having related mechanical and electrical functions such as a magnetic media transport is analyzed by combining tachometer signals indicative of a mechanical function with data signals from the electrical functions. Such data signals can represent formatting of data on the media while the tachometer pulses indicate capstan rotation used for media transport. In tape systems, data-signal formatting is usually generated by successive motions of the media.

3,711,692
DETERMINATION OF NUMBER OF ONES IN A DATA FIELD BY ADDITION

Kenneth E. Batcher, Stow, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed March 15, 1971, Ser. No. 124,089
Int. Cl. G06f *7/50*
U.S. Cl. 235—175 **5 Claims**

An arrangement for counting the number of a given data such as ones in a data field. The system employs full adders which count the number of ones in basic three element subsets of the data field. Additional full adders total the results of the

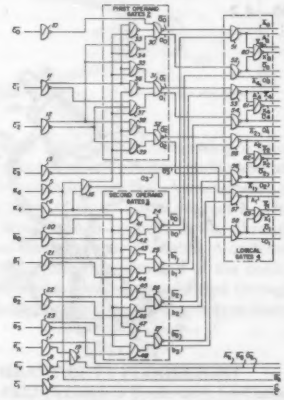


first series of full adders and also count any additional ones of the data field.

3,711,693
MODULAR BCD AND BINARY ARITHMETIC AND LOGICAL SYSTEM

James N. Dahl, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed June 30, 1971, Ser. No. 158,461
Int. Cl. G06f *7/50*
U.S. Cl. 235—174 **5 Claims**



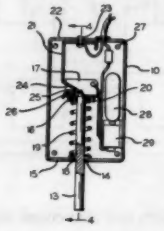
An arithmetic and logical unit for receiving four bit portions (quartets) of two input operands, a carry-in and several function control signals generates selectively several functions of the operands, including decimal and binary addition and subtraction functions or a desired logical function and provides carry look-ahead and carry signals. A set of conversion gates selectively provides either a true or an excess-6 form of the first operand quartet while a complementation set of gates selectively provides a true or 1's complement form of the second operand quartet. Bit pairs, from the corresponding positions in the resulting quartets, are combined to produce elementary logical functions, including the AND, inclusive OR and exclusive OR functions. In parallel, these elementary functions, an input carry bit, a set of carry look-ahead gates, a set of adder gates and a pair of control signals respectively provide carry signals and the selected function of the operands. A set of decimal correction gates, responsive to the carry signals, are used to correct the adder gate output for decimal addition and subtraction, when necessary.

3,711,694

KEYHOLE LIGHT

Charles Gronauer, 5234 N. Diversey Boulevard, Whitefish Bay, Wis.

Filed May 13, 1971, Ser. No. 143,070
Int. Cl. E05b *17/10*
U.S. Cl. 240—2.13 **5 Claims**



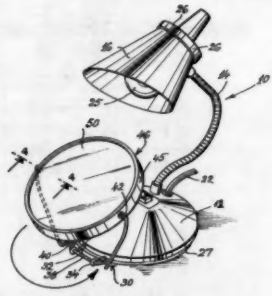
A light is positioned adjacent a keyhole and between a storm or screen door and a house door. When the storm door is opened, the light turns on to light the keyhole, and when the storm door shuts the light goes out.

3,711,695

LAMP AND MIRROR COMBINATION

Max A. Orbach, 794 Midwood Street, Brooklyn, N.Y.

Filed May 24, 1971, Ser. No. 146,441
Int. Cl. F21v *33/00*
U.S. Cl. 240—4.2 **12 Claims**



In a lamp and mirror combination, a base adjustably supports a lamp; a mirror is rotatably supported by the base. The mirror can be turned under the base to a concealed position and can be turned up to an angular position adjacent the base for optimum viewing of person's face. A wire stand can rotatably support the mirror and enables the mirror to be turned to the concealed and angular positions. The lamp may include a flexible gooseneck, lamp shade and lamp socket for adjusting the lamp to any desired illuminating position. The base can be circular or rectangular. The rectangular base can be hollow and include a slidable drawer. The lamp can be removably mounted on or in the rectangular base.

3,711,696

FLORAL DECORATIVE NIGHT LIGHT

Kenneth A. Sieloff, 4821 Belzair Drive, Troy, Mich.

Filed Oct. 22, 1970, Ser. No. 83,126
Int. Cl. F21p *1/02*
U.S. Cl. 240—10 P **8 Claims**

A floral decorative night light assembly comprising a plug means which includes a housing having a reduced diameter portion provided with a light bulb socket means, a low intensity light bulb having a stem located in said socket means, said bulb being provided with a suitable coating to provide rapid cooling of the bulb, a simulated leaf background member having a central hole therethrough and a plurality of simulated leaf tips extending radially outward around the periphery thereof, and said simulated leaf background member being disposed on the top of said reduced diameter housing portion with said bulb stem extending through said central hole in said

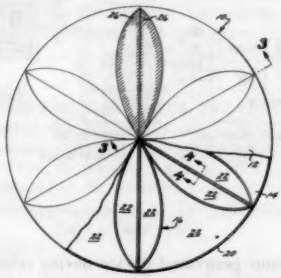
simulated leaf background member, a carrier member having a central mounting ring mounted on the upper side of said simulated leaf background member with said bulb stem also extending through said mounting ring, whereby when said bulb is securely located in said socket means the carrier member and simulated leaf background member will be retained in place on the plug means by said bulb and a plurality of simulated flowers mounted on said carrier member in a circular arrangement around said bulb.

3,711,697

APPARATUS FOR DISPLAYING COLORED LIGHT PATTERNS

George E. Boyle, San Diego, Calif., assignor to Corlite Corporation, San Diego, Calif.

Filed March 10, 1971, Ser. No. 122,696
Int. Cl. F21p *1/02*
U.S. Cl. 240—10 **10 Claims**



An apparatus for displaying colored light patterns and including a translucent sheet behind which is disposed an object having light reflective colored surfaces. The colored surfaces reflect light onto the translucent sheet in a color pattern generally corresponding to the arrangement of the colored surfaces. The color pattern is characterized by a striking gradation of color tone from strong to light because of the reflective character of the colored surfaces. A preferred embodiment utilizes an object or objects having colored reflective walls which also serve as a core material in a decorative or structural panel. At least one sheet of the panel is made of translucent material.

3,711,698

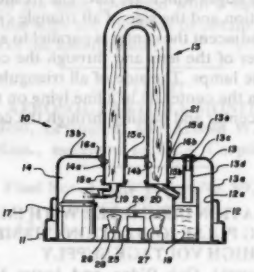
LIGHT DEVICE

Richard E. Hess, 7136-60th Ave. N., New Hope, Minn.

Filed April 5, 1971, Ser. No. 131,337
Int. Cl. F21p *3/00*; F21s *3/12*
U.S. Cl. 240—10.1 **7 Claims**

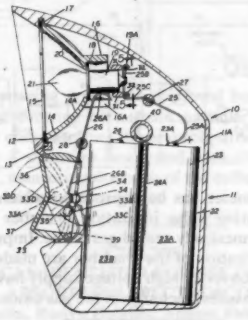
A lighting device serving both ornamental and functional purposes having a base, a vertically arranged light passing

member extending upwardly from the base, a light and color wheel in the base arranged to direct light of various colors into the light passing member and having forms wherein water vapor, reflective material or incense may be directed into the



light passing member to carry the light beam and an additional form wherein the light passing member is filled with fluid and air is bubbled therethrough. The form incorporating the water vapor may include means to pass the water vapor into the air to serve as a humidifying device.

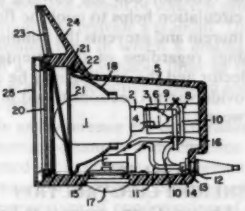
3,711,699
FLASHLIGHT CONSTRUCTION
Joseph G. Bacevius, 780 Bridgeport Avenue, Shelton, Conn.
Filed April 2, 1970, Ser. No. 25,147
Int. Cl. F21l 7/00
U.S. Cl. 240—10.68 **12 Claims**



This disclosure is directed to a flashlight construction having a minimum of component working parts so as to render it readily adaptable as a relatively inexpensive, low cost, disposable unit. It comprises a housing having a reflector assembly with bulb socket for loosely receiving a bulb, and a battery connected in electrical circuit with the bulb by means of spring leaf type contacts or conductors, and having a toggle switching means operatively associated with one of the spring conductors for energizing and de-energizing the bulb.

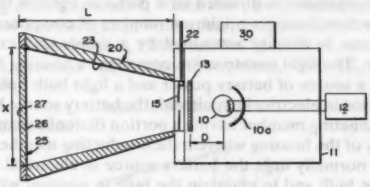
3,711,700
DISCLOSING LIGHT
Arnold E. Westlund, Jr., Manchester, and Emery G. Audesse, Salem, both of Mass., assignors to GTE Sylvania Incorporated
Filed May 10, 1971, Ser. No. 141,742
Int. Cl. A61b 1/06
U.S. Cl. 240—41.15 **1 Claim**

For dental, medical and other uses, with a disclosant phosphor-dye such as sodium fluorescein, a disclosing light emitting radiation substantially confined to the wavelength range between 380 and 505 nanometers (nm.) and free from infrared, yellow and ultraviolet. The light includes a source of light, which can be an incandescent lamp, a dichroic reflector behind it to reflect blue light forwardly and transmit the rest backwardly, a dichroic filter in front of the lamp to transmit blue light and reflect the infrared backwardly, and a viewing mirror for the parts irradiated, the mirror reflecting yellow



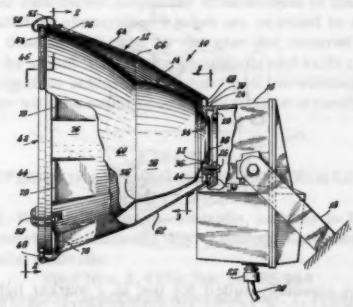
light toward the observer and transmitting the other radiations. The ultraviolet, although it would excite the fluorescein, is filtered out because it would also make the natural teeth, and some kinds of artificial teeth, fluoresce and obscure the fluorescence of the fluorescein.

3,711,701
UNIFORM VARIABLE LIGHT SOURCE
Henry P. Squyres, El Monte, Calif., assignor to California Institute of Technology, Pasadena, Calif.
Filed Dec. 4, 1970, Ser. No. 95,189
Int. Cl. F21m 7/00
U.S. Cl. 240—46.13 **11 Claims**



A uniform stable light source comprising a special lamp with a built in reflector which projects stable and uniform luminous flux with unvarying spectral characteristics with a distribution temperature of about 3,000 degrees K. The uniform luminous flux flows into a conical cavity through an iris diaphragm whose diameter is controllable. A uniform light diffuser is positioned at the opposite end of the conical cavity. The level of luminance which is transmitted through the diffuser is controlled by controlling the diaphragm diameter.

3,711,702
HEAVY DUTY FLOODLIGHT
Tarek B. Adra, 4823 Oceanview Boulevard, La Canada, Calif.
Filed Nov. 2, 1970, Ser. No. 85,909
Int. Cl. F21m
U.S. Cl. 240—47 **5 Claims**



A heavy duty floodlight having an outer housing or cowling and a separate inner housing or reflector with a lens cover

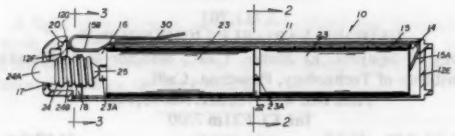
adapted to tightly seal the inner housing. The cowling is provided with slots in a rear inwardly extending flange, and air scoops at the front edge extending radially beyond the frame of the lens cover to permit air to circulate through the space formed between the reflector and the cowling and the surrounding air. This circulation helps to cool the floodlight and the lamp mounted therein and prevents the building up of heat between the housings regardless of the orientation of the floodlight. The reflector and the cowling may be complementarily shaped to provide venturi sections to aid in the circulation of air therebetween.

3,711,703

FLASHLIGHT CONSTRUCTION

Joseph G. Bacevius, Shelton, Conn., assignor to Paul G. Garrity, Stamford, Conn.

Filed Nov. 16, 1970, Ser. No. 89,907
Int. Cl. F21l *3/00*
U.S. Cl. 240—10.6 **5 Claims**



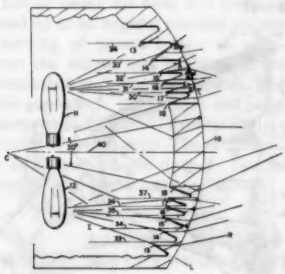
This disclosure is directed to a portable light or flashlight construction having a minimum number of component parts which can be readily assembled by a simple and expedient manner. The light construction comprises a housing for containing a source of battery power and a light bulb operatively connected in electrical circuit with the battery source by a single conducting member having a portion thereof extending externally of the housing wherein the conducting members function to normally urge the battery source in electrical contact with the bulb and to maintain the bulb in position within the housing. The conducting member also functions as a switch means independent of any actuator for energizing and deenergizing the circuit to the bulb. Also the conducting member is formed to define a holding clip for the flashlight with the exposed portion being usable as a decorative feature.

3,711,704

MARKER LIGHT AND LENS

Joseph Spiteri, Erie, Pa., assignor to Rem Research, Inc., Harborcreek, Pa.

Filed Nov. 19, 1971, Ser. No. 200,547
Int. Cl. F21v *5/04, 5/05*
U.S. Cl. 240—106.1 **4 Claims**



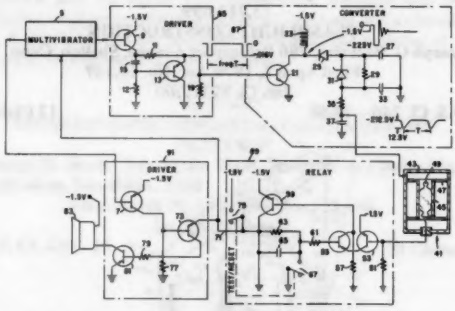
A lamp especially suited for use as a marker light for a motor vehicle, such as a motor vehicle trailer. The light has two lamps, one of which will be automatically turned on when the other fails. The two lamps are located as close together as may be and the lens is so designed that the illumination from the fresnel lens will transmit the required illumination from each lamp. To this end the fresnel lens has serrations on the side of it adjacent the lamps. The serrations are formed by ridges having side edges which are flat. The fresnels are triangular in cross section and the side of all triangle cross sections of the serrations adjacent the center is parallel to a line passing through the center of the lens and through the center of the space between the lamps. The side of all triangular cross sections remote from the center lie in a line lying on the said side remote from the center and passing through the center of curvature of the lens.

3,711,705

ALARM RADIATION DOSIMETER WITH IMPROVED INTEGRATING PULSE IONIZATION CHAMBER AND HIGH VOLTAGE SUPPLY

Casimer J. Borkowski, Oak Ridge, and James M. Rochelle, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 9, 1971, Ser. No. 196,893
Int. Cl. G01t *1/18*
U.S. Cl. 250—83.6 R **7 Claims**



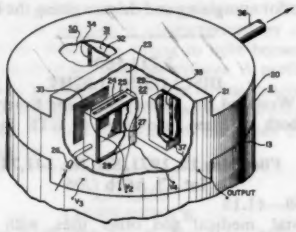
An alarm dosimeter has been provided which features an improved integrating pulse ionization chamber of the type containing an hermetically sealed gas diode. Improved operation and miniaturization of the chamber are made possible by a ringing choke converter high voltage supply having a ripple-type output that insures discharge of the gas diode.

3,711,706

TWO-STAGE, SINGLE MAGNET MASS SPECTROMETER

William D. Davis, Schenectady, N.Y., assignor to General Electric Company

Filed Dec. 8, 1972, Ser. No. 96,117
Int. Cl. H01j *39/34*
U.S. Cl. 250—41.9 ME **1 Claim**



The spectrometer includes a single magnet having two opposing pole faces each spanning at least a 270° sector. A 270° sector nonmagnetic chamber is juxtaposed in the air gap of the magnet and is provided with partitions for forming 90° and

180° sector portions. An ion source generates a relatively wide, parallel beam of ions which is accelerated into the 90° sector portion. A common partition between the 90° and 180° sector portions and the partition at the exit end of the 180° sector portion are each provided with a narrow slit through which particular ions are focussed to obtain the mass separation function of the spectrometer.

3,711,707

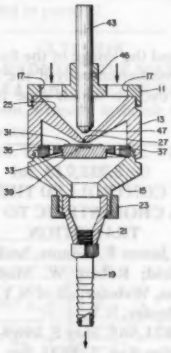
AEROSOL PARTICLE MONITOR

Pedro Lilienfeld, Lexington, and Arnold W. Doyle, Weston, both of Mass., assignors to GCA Corporation, Bedford, Mass.

Filed Nov. 13, 1970, Ser. No. 89,237

Int. Cl. G01n *21/26*

U.S. Cl. 250—43.5 D **4 Claims**



In the monitoring apparatus disclosed herein, a relatively continuous monitoring of aerosol particle concentration is facilitated by concentrating the aerosol particles by impaction and then, in a structure integrated with the impaction apparatus itself, measuring the mass of the collected aerosol particles by beta radiation absorption.

3,711,708

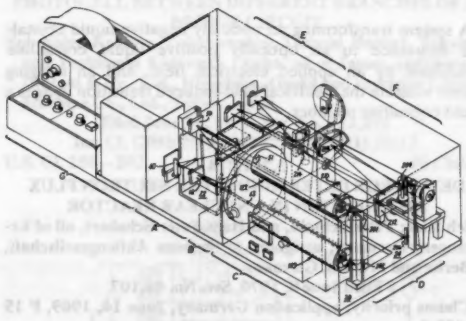
RAPID SCAN IDENTIFIER FOR USE IN INFRARED ABSORPTION SPECTROSCOPY

Stanley A. Dolin, Roslyn Heights; Andres Folch, Jr., and Dana F. Geiger, both of New York, all of N.Y., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Feb. 25, 1971, Ser. No. 118,923

Int. Cl. G01n *21/26*

U.S. Cl. 250—43.5 R **20 Claims**



A rapid scan spectrum identifier fur use in identifying infrared spectrum of the output of a gas chromatograph to identify its absorption characteristics and includes an infrared source and beam splitter, a double beam chopper for alternately sending the infrared beam through a sample or reference gas cell mounted in a suitable furnace, the output of which is recombined and analyzed by a monochromator having a narrow output passband of energy detected by a rapid response detector, the output of which is processed by suitable electronic circuitry to provide a readout. The monochromator is of the scanning type in which a grating is synchronously scanned with a circular variable filter so that the first order output of the grating is selectively passed and higher orders rejected by the filter.

The sample and reference gas cell furnace assembly utilizes specially constructed sample and reference gas cells symmetrically mounted in a furnace arrangement for maintaining input gas streams at equal temperatures within each cell and above the temperature of condensation of the sample under investigation. The beam chopper contains associated photoelectronics for physically determining the location of a chopping blade to thereby provide gating signals for indicating the presence at the detector of a sample, reference, or a background signals. These grating signals are used in sample and hold circuits to convert an essentially digitally sampled output into a relatively smooth continuous curve indicative of the absorption of the sample so that the readout represents the sample absorption characteristics corrected for reference for the carrier gas and background effects. The instrument is designed to operate with scan rates of approximately 6 and 30 seconds.

3,711,709

IRRADIATION SYSTEM

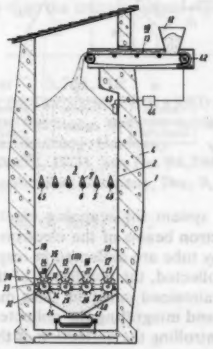
Wolfgang Hubertus Rudolf, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Oct. 8, 1969, Ser. No. 864,691

Claims priority, application Switzerland, Oct. 10, 1968, 15133/68

Int. Cl. G01n *21/26*

U.S. Cl. 250—44 **13 Claims**



The irradiation elements are disposed within a grid made of tubes and distributed across the cross-section of the vessel. The irradiation elements and tubes are oriented to obtain a uniform dose of radiation on the granular material passing through the vessel. The discharge hoppers and knife cylinders are arranged to achieve discharge rates therethrough commensurate with the radiation and flow resistance conditions.

3,711,710

METHOD OF AND MEANS FOR CONTROLLING CORONA EMISSION

Robert J. Wright, Tranmere, Australia, assignor to Research Laboratories of Australia Pty. Limited, Eastwood, South Australia, Australia

Filed Nov. 2, 1970, Ser. No. 85,964

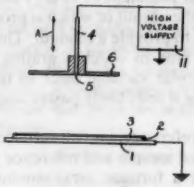
Claims priority, application Australia, Nov. 7, 1969, 63498

Int. Cl. H01j *37/26*

U.S. Cl. 250—49.5 GC **4 Claims**

A method of controlling the area developed by a corona

discharge which consists in providing a shield around the corona point and controlling the effect to the shield to have

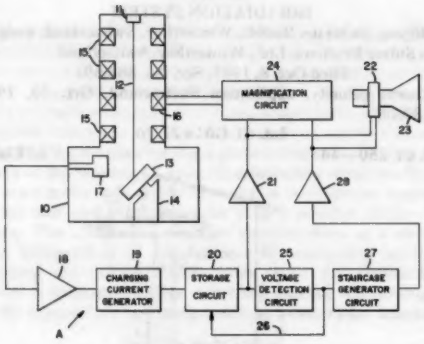


the focussing effect on the corona preferably by controlling the position of the electrical charge or the electrical resistivity of the shield.

3,711,711
SCANNING ELECTRON MICROSCOPE SCANNING SYSTEM

James Dao, Alameda, and Nelson C. Yew, Los Altos, both of Calif., assignors to Etec Corporation, Mountain View, Calif.

Filed Nov. 9, 1970, Ser. No. 87,676
Int. Cl. H01j *37/26*
U.S. Cl. 250—49.5 A **12 Claims**



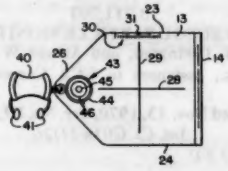
A scanning system for scanning electron microscopes in which the electron beams of the electron-optical column and the cathode ray tube are deflected in response to the number of electrons collected, the amplitude of the cathode ray tube beam being maintained constant. This may be accomplished by amplifying and integrating the collected electrons, and appropriately controlling the deflection of the electron beams in response thereto. Accordingly, the scanning system provides synchronous velocity modulation of the electron beams of the cathode ray tube and the electron-optical column.

3,711,712
METHOD AND DEVICE FOR LOCATING A FOREIGN BODY IN HUMAN EYE

Richard H. McLaren, 385 Los Altos Drive, Pocatello, Idaho

Filed Dec. 28, 1970, Ser. No. 101,525
Int. Cl. G03b *41/16*
U.S. Cl. 250—59 **5 Claims**

In one embodiment two right-angular intersecting radiopaque wires are secured to one leg of a transparent, right-angular frame, which is adapted to be mounted by an operator on the up-turned face of a supine patient, so that the intersection of the wires registers with the axis of the pupil of the injured eye. The other leg of the frame carries an arcuate wire, which the operator aligns with the foremost arc of this pupil, and a fourth wire spaced rearwardly of the arcuate wire and disposed to extend at right angles of the pupil axis. Vertical and cross table X-rays are then taken to provide two roentgenograms on which images of the wires and the foreign body in the eye are superimposed. By measuring the offset of the foreign body images from, respectively, the images of the two

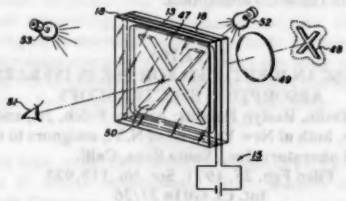


intersecting wires, and the image of the fourth wire, the operator can determine mathematically if the body lies within the optic globe of the eye, in which case it would have to be removed.

3,711,713
ELECTRICALLY CONTROLLED THERMAL IMAGING SYSTEM USING A CHOLESTERIC TO NEMATIC PHASE TRANSITION

Joseph J. Wysocki; James E. Adams, both of Webster; James H. Becker, Penfield; Robert W. Madrid, Macedon, and Werner E. L. Haas, Webster, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 821,565, May 5, 1969, Pat. No. 3,652,148.
This application Aug. 5, 1971, Ser. No. 169,455
Int. Cl. G02s *1/16*
U.S. Cl. 250—83 R **3 Claims**



A system transforming an optically negative liquid crystalline substance to an optically positive liquid crystalline mesophase by an applied electrical field, and an imaging system wherein the electrical field-induced transition images a liquid crystalline member.

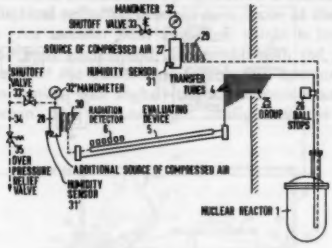
3,711,714
DEVICE FOR DETERMINING THE NEUTRON FLUX DISTRIBUTION IN A NUCLEAR REACTOR

Erich Klar; Peter Schmid, and Hans-Peter Schubert, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 8, 1970, Ser. No. 44,107
Claims priority, application Germany, June 14, 1969, P 19 30 439.3
Int. Cl. G01t *3/00*
U.S. Cl. 250—83.1 **17 Claims**

Stationary evaluating means is positioned outside the nuclear reactor in operative proximity with the transfer tubes

extending into the reactor. The evaluating means measures the activity of stationary columns of balls in the transfer tubes.

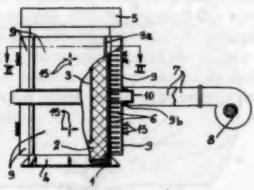


The stationary evaluating means extends alongside a plurality of transfer tubes and comprises a plurality of radiation detectors devices connected in parallel.

3,711,715
CONTAINER FOR RADIOACTIVE MATERIALS HAVING A HEAT RELEASABLE OUTER PANEL WALL

Camille Bochard, Lyon, France, assignor to Robatel S.L.P.I., Genas, Rhone, France

Filed Feb. 9, 1971, Ser. No. 113,940
Int. Cl. G21f *5/00*
U.S. Cl. 250—108 WS **4 Claims**

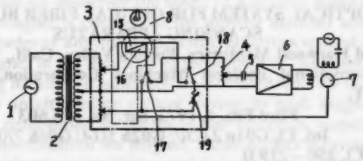


A container for radioactive materials comprising a chamber provided with a wall carrying outwardly projecting cooling elements such as fins. A casing is provided around the wall and means are provided for passing cooling fluid through the space between the wall and casing, which space contains the cooling elements. Preferably the casing comprises a plurality of panels secured to the wall but adapted to eject away from the container should the cooling air flow means fail. A preferred securing/ejection means comprises studs which melt on failure of the airflow means and springs ejecting the panels.

3,711,716
PHOTOELECTRIC SENSOR FOR LINE TRACING AND EDGE TRACING COMPRISING MEANS FOR SWITCHING PHOTOCELL BETWEEN DIFFERENT BRANCHES OF A BRIDGE CIRCUIT

Nobushige Koyano, Yokohamashi; Tadashi Hattori, Tokyoto, and Yoshimasa Kidowaki, Osaka, all of Japan, assignors to Iwatani & Co., Ltd., Higashiku, Osaka and Precision Cutting Machine Co., Ltd., Tokyo, Japan

Filed June 11, 1971, Ser. No. 152,291
Int. Cl. G05b *1/00;* **G06k** *11/02;* **H01j** *39/12*
U.S. Cl. 250—202 **10 Claims**

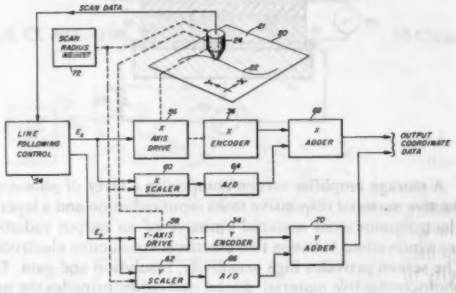


This invention relates to a photoelectric tracing system in which the sensing device can be easily changed from a line tracing type to an edge tracing type and vice versa.

3,711,717
OPTICAL LINE FOLLOWER

Leonard G. Rich, West Hartford, and Dale G. Blake, Vernon, both of Conn., assignors to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Sept. 16, 1970, Ser. No. 72,575
Int. Cl. G05b *1/00*
U.S. Cl. 250—202 **6 Claims**

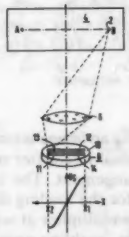


In an optical line follower having a circular scan path and encoders for encoding the position of the center of the scan path, a vector signal defining the location, relative to the center of the scan path, of the point at which the scan path crosses the followed line is added to the encoder signal to provide a coordinate data output signal which output signal repetitively taken at spaced points along the line describes the line more accurately than the encoder signal repetitively taken by itself.

3,711,718
APPARATUS FOR DETECTING INFRARED RADIATION

Bernt Paul, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Munchen, Germany

Filed Dec. 2, 1970, Ser. No. 94,295
Claims priority, application Germany, Dec. 9, 1969, P 19 61 574.8
Int. Cl. H01j *39/12*
U.S. Cl. 250—210 **8 Claims**



An apparatus for detecting radiation and a change in position of the radiation source movable along a path has a radiation-sensitive electronic semiconductor. A bridge circuit having resistances is formed from the semiconductor and these resistances are grouped into two pairs of mutually adjacent resistances. Two of the resistances, one from each of the pairs, have respective elongated surface portions disposed one adjacent the other along a common line. The surface portions jointly cover the range over which the radiation source is movable. The apparatus is positionable to have the surfaces

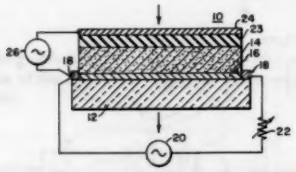
face the radiation so that the line is substantially parallel to the path over which the radiation source is movable.

3,711,719

STORAGE AMPLIFIER SCREEN

Zoltan P. J. Szepesi, Elmira, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 20, 1970, Ser. No. 91,254
Int. Cl. H01j *39/12*
U.S. Cl. 250—213 R **12 Claims**



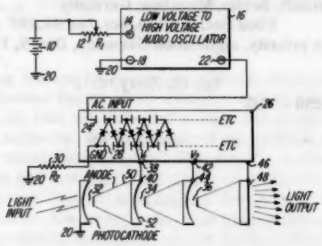
A storage amplifier screen comprising a layer of photoconductive material responsive to an input radiation and a layer of electroluminescent material emissive of an output radiation are sandwiched between two electrical conductive electrodes. The screen provides high sensitivity, resolution and gain. The photoconductive material, doped zinc oxide, provides the property of persistence of the input image under excitation for over 10 minutes after removal of input radiation. The photoconductive layer also provides the property of storage of the image for days in the absence of an electrical field.

3,711,720

AUTOMATIC BRIGHTNESS CONTROL FOR IMAGE INTENSIFIER TUBE

Robert Allen Kryder, Strasburg, Pa., assignor to RCA Corporation

Filed Feb. 12, 1971, Ser. No. 114,787
Int. Cl. H01j *31/50*
U.S. Cl. 250—213 VT **5 Claims**



A circuit for operating an image intensifier tube wherein the voltages for the individual intensifier stages are supplied by a voltage multiplier arrangement. The invention includes circuitry to compensate for the loading down and cutting off of individual stages of the multiplier at scene illumination levels above 10^{-2} foot candles, enabling operation of the intensifier at scene illumination levels as high as 10^{2} foot candles.

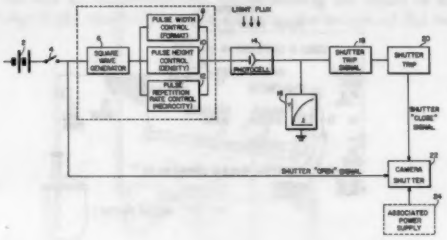
3,711,721

AUTOMATIC EXPOSURE CONTROL FOR CONTROLLING PHOTOGRAPHIC SHUTTER

Donald H. Hansen, 1331 N. Forest, Williamsville, N.Y.

Filed Oct. 7, 1971, Ser. No. 187,331
Int. Cl. G01j *1/00*; H01j *39/12*
U.S. Cl. 250—214 P **10 Claims**

A camera shutter is controlled by a capacitive circuit, with a square wave generator of variable frequency and pulse width



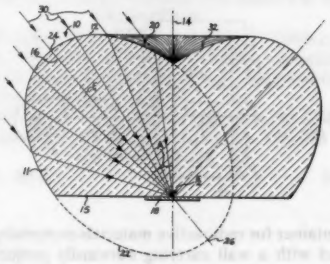
to control the charging characteristics of the capacitor which is analogized to the reciprocity failure of the camera film.

3,711,722

DETECTING SYSTEMS AND THE LIKE

Arthur J. Kavanagh, Southbridge, Mass., assignor to American Optical Company, Southbridge, Mass.

Filed July 28, 1958, Ser. No. 752,159
Int. Cl. H01j *3/14*
U.S. Cl. 250—216 **8 Claims**



1. A light-collecting and detecting system comprising a lens having an annularly shaped toric refracting surface formed thereon in concentric relation to a central axis of said system, and in predetermined spaced relation to a preselected focal point on said axis, said lens having a second surface thereon transversely intersecting said axis substantially at said focal point, a layer of photosensitive material of relatively small size carried by said second surface adjacent said focal point, said annular refracting surface being, in all radial sections thereof, so disposed in offset relation to said axis and so spaced relative to said focal point and so convexly elliptically curved as to face outwardly in predetermined angular relation to said optical axis and simultaneously direct and concentrate substantially all of the light being received from corresponding parts of a conically shaped hollow annular object field of predetermined mean angular value and width onto said layer, whereby any material change in intensity in the light being received from any part of said annular object field will be detected by said photosensitive layer.

3,711,723

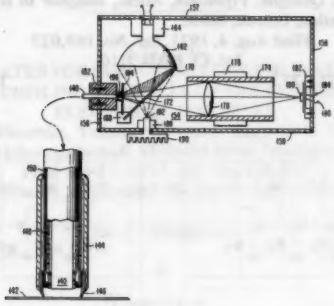
OPTICAL SYSTEM FOR OPTICAL FIBER BUNDLE SCANNING APPARATUS

David Harwood McMurtry, Portola Valley, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 4, 1972, Ser. No. 223,603
Int. Cl. G01n *21/30*; G02b *5/14*; G06k *7/00*
U.S. Cl. 250—219 D **10 Claims**

An elongated optical fiber bundle used in a manual scanning system having a high intensity light source is pro-

tected from the adverse effects of the high temperature involved by the optical system disclosed. The proximal end of the fiber bundle is illuminated by light from a source and associated elliptical reflector brought to a focus at the face of the bundle. An annular heat and flare shield is interposed between the light source and the bundle with the aperture about the end of the bundle, preferably the aperture of the shield has a conical wall slightly beyond a conical annulus of the light beam. This annular light configuration is brought



about by the imposition of a mirror having a central aperture between the light source and the bundle for permitting light from the bundle to pass directly to a photosensitive device. Heat from light energy passing through the aperture without reflection to the bundle for illumination thereof is dissipated by a heat radiator positioned beyond the mirror aperture. The efficiency of heat radiation is maximized by locating the heat radiator at the focal point of the light energy passing through the mirror aperture.

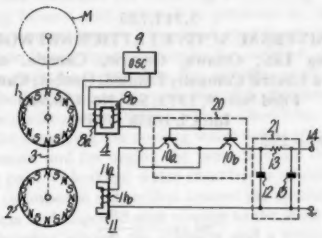
ERRATUM

For Class 250—220 see:
Patent No. 3,711,177

3,711,724
SPEED DETECTING DEVICE

Saburo Uemura, Kanazawa-ku, Yokohama-shi, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 11, 1972, Ser. No. 216,437
Claims priority, application Japan, Jan. 19, 1971, 46/1541
Int. Cl. G01p *13/00*
U.S. Cl. 307—43 **16 Claims**

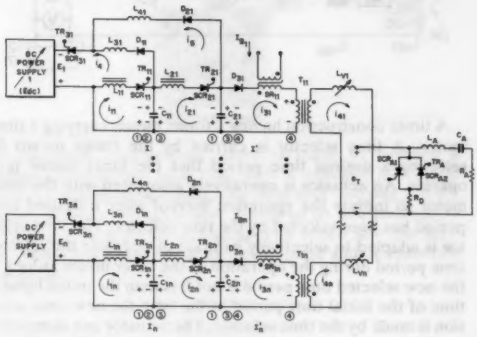


In a device for detecting the speed of a moving member, at least one magnet is coupled to the moving member and has magnetic poles of alternately opposite polarities spaced apart on the magnet in the direction of movement of the latter with the moving member, a generator is associated with the magnet to provide an alternating voltage having its peak magnitude and phase determined by the speed and direction, respectively, of the movement of the magnet, a transformer is excited by a signal, as from an oscillator, and is responsive to magnetic flux from the magnet for producing intermittent control signals at intervals determined by the speed of the magnet movement, and such control signals control a circuit by which the above alternating voltage is sampled at the occurrences of the control signals and a D.C. output voltage is provided corresponding, in its magnitude and polarity, to the speed and direction, respectively, of the magnet movement.

3,711,725
APPARATUS AND METHOD FOR RADIO-FREQUENCY PULSE GENERATION IN TUNED RADIO-FREQUENCY LOADS

Paul R. Johannessen, Lexington, Mass., assignor to Megapulse Incorporated, Waltham, Mass.

Filed Aug. 23, 1971, Ser. No. 173,827
Int. Cl. H03k *3/02*
U.S. Cl. 307—108 **10 Claims**

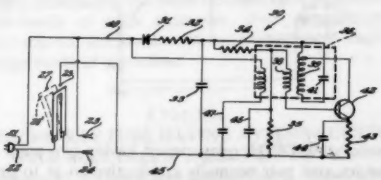


This disclosure describes a radio frequency (RF) pulse generation system employing magnetic pulse compression circuits coupled through individual matching transformers into a tuned RF load. The pulse compression circuits are operated sequentially, and each circuit is matched to the tuned load the impedance of which (volt-ampere relation) is a function of the current amplitude during the generation of fast rising pulses. Variations in amplitude, pulse width and position of each half-cycle current pulse are obtained by control of the corresponding magnetic pulse compression circuit.

3,711,726
BIMETALLIC SIGNAL DEVICE FOR APPLIANCES

Jay A. Wiechert, Benton Harbor, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Continuation of Ser. No. 48,150, June 22, 1970. This application Feb. 2, 1972, Ser. No. 223,000
Int. Cl. H01h *61/04*
U.S. Cl. 307—117 **4 Claims**

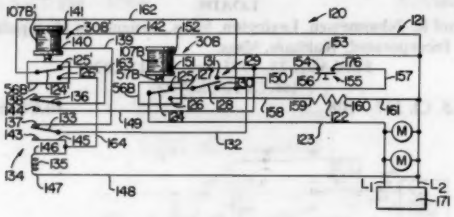


A control means for providing a signal indicating a shutdown of an appliance, the control means including a bimetallic element connected in series with the power line to the appliance, the bimetallic element being arranged to deflect substantially upon passage of the current from the source and to return to its original condition upon cessation of the current, the bimetallic element being engageable with a stationary contact for actuating a signal generating device.

3,711,727
TIMER CONSTRUCTION MEANS AND SYSTEM UTILIZING THE SAME OR THE LIKE

Emil Niemand, Waterbury, Conn., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 47,011, June 17, 1970, Pat. No. 3,652,870.
This application Dec. 29, 1971, Ser. No. 213,769
Int. Cl. H01h *43/04*
U.S. Cl. 307—141.4 **8 Claims**

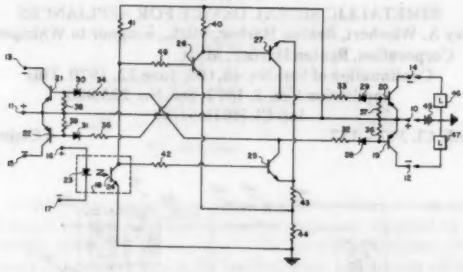


A timer construction having a frame means carrying a timer motor. A time selector is carried by the frame means for selecting a desired time period that the timer motor is to operate. An actuator is operatively associated with the timer motor to initiate the operation thereof after a desired time period has been selected by the time selector. The time selector is adapted to selectively increase or decrease the selected time period during the operation of the timer motor as long as the new selected time period is not less than the initial lapse of time of the initial time period at the time the new time selection is made by the time selector. The actuator can comprise a push button means which indicates the amount of time lapsing during the operation of the timer. The timer construction is utilized with a similar timer construction to provide a unique timer construction system.

3,711,728
SOLID STATE DOUBLE-POLE DOUBLE-THROW RELAY

Felminio Villella, 351 Jack Coleman Drive, Huntsville, Ala., and Leon C. Hamiter, 211 Homewood Drive, Huntsville, Ala.

Filed Aug. 19, 1971, Ser. No. 173,183
Int. Cl. H03k *17/60*
U.S. Cl. 307—254 **6 Claims**

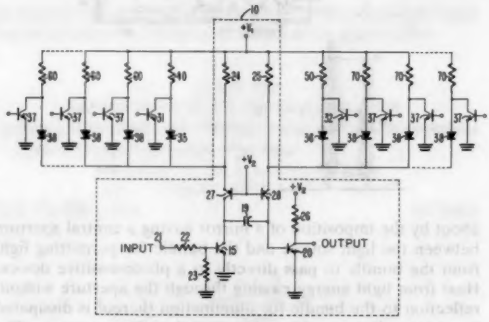


A solid state DPDT relay circuit having two pairs of PNP transistors, one pair normally conductive so as to provide a closed current path to terminals connected to the collectors of its transistors and the other pair normally non-conductive so as to provide openings in current paths to terminals connected to the collectors of its transistors. The bases in each pair of PNP transistors are connected to one another, and the emitters of both pairs are connected to two interconnected terminals. The base pairs are connected to an NPN phototransistor of a photon-coupling pair, one base pair through the base-collector junction of an NPN transistor and the other through the base collector junctions of two other NPN transistors in series. Switching action is realized by actuation of a light-emitting diode coupled with the phototransistor to change the conductive state of the latter, which in turn changes the conductive states of both pairs of PNP transistors.

3,711,729
MONOSTABLE MULTIVIBRATOR HAVING OUTPUT PULSES DEPENDENT UPON INPUT PULSE WIDTHS

Virgilio J. Quiogue, Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 4, 1971, Ser. No. 169,027
Int. Cl. H03k *3/10*
U.S. Cl. 307—273 **12 Claims**

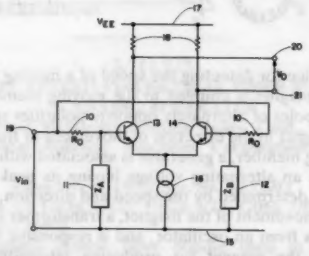


A single-shot monostable multivibrator for generating an output pulse the duration of which is a function of the time duration of the input (trigger) pulse and the resistive components of an R-C network, including a pair of normally conducting transistor switches and a pair of R-C paths having a capacitor in common. Application of the input pulse turns off the first switch and allows the capacitor to charge substantially linearly through the first path including the base of the second switch until the termination of the input pulse. The capacitor then discharges substantially linearly through the collector of the first switch forced by a reverse potential through the second path. The time duration of the output pulse is a function of the ratio of the resistive components in the discharging and charging paths and the width of the input pulse. A plurality of control circuits is provided for regulating the amount of resistance in the R-C paths.

3,711,730
UNIVERSAL ACTIVE LATTICE NETWORK

Koang Eng Lim, Ottawa, Ontario, Canada, assignor to Northern Electric Company Limited, Quebec, Canada

Filed Nov. 9, 1971, Ser. No. 196,920
Int. Cl. H03k *1/16*
U.S. Cl. 307—295 **4 Claims**



The invention provides an active lattice network which may be used in place of a passive lattice network of any order.

There is provided a differential amplifier having a pair of input ports and a pair of output ports. Each of the input ports is connected to the same input terminal through a respective resistance element corresponding to the terminating resistance of the network and to a common terminal through a respective impedance element having predetermined characteristics. The output of the network may be obtained either from the pair of output ports or from one of the output ports and the common terminal.

3,711,731

APPARATUS FOR SUPPLYING COOLING WATER TO THE COOLING CHANNELS OF THE ROTORS OF ELECTRICAL MACHINES

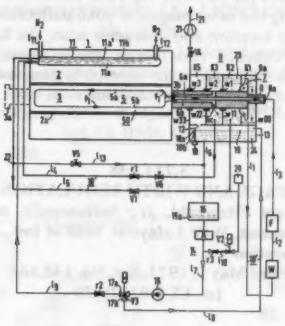
Manfred Pluschke, Velbert, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim Ruhr, Germany

Filed April 2, 1971, Ser. No. 130,712

Claims priority, application Germany, April 4, 1970, P 20 16 169.7

Int. Cl. H02k *9/00*

U.S. Cl. 310—53 **22 Claims**



An apparatus for supplying cooling water to the cooling channels of an electrical machine rotor having a rotor shaft has an inlet chamber surrounding the rotor shaft in liquid-tight relation to the ambient and an outlet chamber communicating with the rotor channels for receiving the cooling water, the latter being heated and reduced in pressure by its passage through the rotor channels. The outlet chamber surrounds the rotor shaft in liquid-tight relation to the ambient. A primary circulation path for conveying the cooling water connects between the outlet chamber and the inlet chamber for conducting the cooling water between these chambers. A pump is provided for supplying the cooling water to the inlet chamber under pressure and for urging the same through the primary conveying path. A leakage water chamber is situated next to the outlet chamber in a direction toward the ambient and has a contactless seal disposed with respect to the shaft where the leakage chamber adjoins the ambient and a second contact seal where the leakage chamber adjoins the outlet chamber. The leakage chamber serves to collect cooling water which leaks through from the second seal during normal operation, the cooling water being mixed with air leaking into the leakage chamber from the ambient. The pump communicates with the leakage chamber for drawing the leakage cooling water therefrom. A source of hydrogen gas is connected to the cooling water conveying path for saturating the cooling water conveyed therein with hydrogen. An oxygen removal device receives the leakage water mixed with air and is connected between the leakage water chamber and the primary conveying path.

3,711,732

MINIATURE SYNCHRONOUS MOTOR

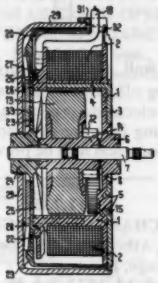
Hermann Gerber, Courgevaux, and Peter Frey, Murten, both of Switzerland, assignors to Sain A.G., Friboug, Switzerland

Filed Feb. 2, 1971, Ser. No. 111,840

Claims priority, application Switzerland, Feb. 17, 1970, 2225/70

Int. Cl. H02k *19/00*

U.S. Cl. 310—162 **13 Claims**



A miniature synchronous motor is made by forming a toothed stator in two parts. One part is moulded into a coil former by injection moulding, the moulding carrying a rotor bearing seating. The other part is located on and fastened to the first part unit by an insulating shell which also carries a rotor bearing seating. The rotor is multipolar and permanently magnetized.

3,711,733

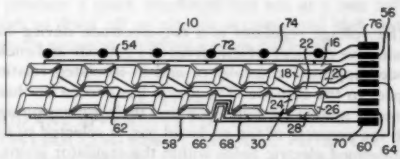
INTERCONNECTED ELECTRODE DISPLAY MEANS

Robert R. Skutt, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Nov. 12, 1971, Ser. No. 198,284

Int. Cl. H05b *37/00*

U.S. Cl. 313—109.5 **17 Claims**



A multiple-character display device in which characters are displayed by selective energization of electrodes in sets, with one set of electrodes being provided for each character. Corresponding electrodes in different character sets are interconnected by conductors which are interwoven through spaces between electrodes in the character sets to form continuous paths, thus eliminating the need for external connections for each electrode of each character. Two embodiments of character sets are disclosed, with one embodiment employing a two-stage mode of operation.

3,711,734

CATHODE-RAY TUBE HAVING ANTENNA GETTER WITH BIMETALLIC INSERTION DEVICE

Eiichi Yamazaki, Ichihara, and Hiromi Kanai, Mobara, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 27, 1970, Ser. No. 40,774

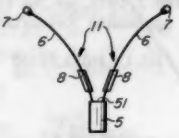
Claims priority, application Japan, May 30, 1969, 44/49713 (utility model); May 30, 1969, 44/49714 (utility model); June 2, 1969, 44/50512 (utility model)

Int. Cl. H01j *19/70, 61/26, 9/18*

U.S. Cl. 313—174 **4 Claims**

In cathode-ray tubes provided with an antenna getter on an electron-gun structure, a cathode-ray tube having antenna

getter structures so improved in construction that, when the electron-gun structure is advanced for insertion into said cathode-ray tube, there will be eliminated contact between the getter structures and a conductive coating on the inner



surface of the tube wall, thereby to protect the conductive coating from coming off or being damaged, whereby deterioration in the inner-electrode insulation due to release of fine particle of the coating into the tube and the consequent in-tube discharge phenomenon may be prevented.

3,711,735

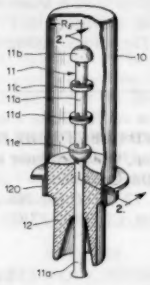
CORONA DISCHARGE VOLTAGE REGULATOR

Leigh Curtis Foster, Atherton, Calif., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Jan. 12, 1972, Ser. No. 217,155

Int. Cl. H01j *17/04*

U.S. Cl. 313—216 **12 Claims**



The voltage regulator is a two-electrode device having a conductive cylinder which serves as a cathode and encloses an anode supported coaxially of and in insulated relation with respect to the cathode. The anode has corona discharge elements of unique configuration and their dimensioning, along with the pressure of the enclosed gas, is selected to establish well-defined electric fields within the regulator giving rise to corona or glow discharge in the presence of a predetermined anode-cathode voltage established by connecting the device to a voltage supply that is to be regulated.

3,711,736

X-RAY TUBE HAVING A ROTARY ANODE

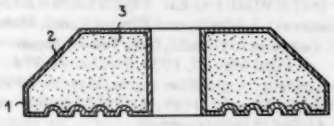
Emile Gabbay, Paris, France, assignor to Compagnie Generale de Radiologie

Filed March 4, 1971, Ser. No. 121,078

Claims priority, application France, March 13, 1970, 7009101

Int. Cl. H01j *35/10*

U.S. Cl. 313—330 **7 Claims**



X-ray tube having a rotary anode comprising a thin outer wall made of a refractory metal preferably of high atomic number, such as tungsten. This wall forms a closed receptacle filled with a metal or an alloy in liquid state or melting at a relatively low temperature, such as sodium.

3,711,737

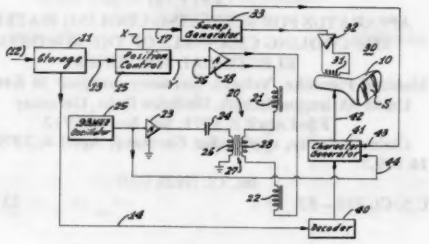
CATHODE RAY DISPLAY SYSTEMS

Irvin M. McVey, Agoura, and Norman L. Olson, Marina Del Rey, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 14, 1969, Ser. No. 849,992

Int. Cl. H01j *29/70*

U.S. Cl. 315—18 **7 Claims**



Improvements for cathode ray tube character displays are disclosed, using the same magnetic yoke deflection system for X-Y character location and character scan, the latter including a high frequency raster scan, for example, in the Y-direction. The hf raster scan control is coupled to the Y-deflection yoke system for resonance at the raster scan frequency.

3,711,738

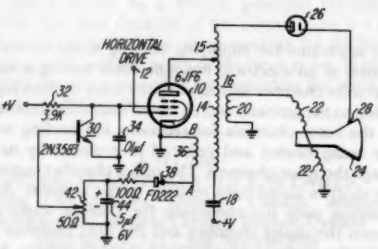
HIGH VOLTAGE AND WIDTH REGULATION CIRCUIT

William Vincent Fitzgerald, Jr., Indianapolis, and Richard Charles Lemmon, West Lafayette, both of Ind., assignors to RCA Corporation

Filed May 1, 1971, Ser. No. 148,661

Int. Cl. H01j *29/70*

U.S. Cl. 315—29 **7 Claims**

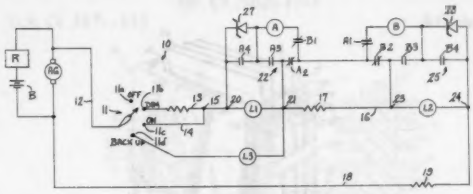


Uncontrolled variations in the beam current drawn by the cathode-ray picture tube of a television receiver can cause such increases in the high voltage developed for its ultor electrode as will present problems of X-radiation. These uncontrolled variations can also result in a loading of the horizontal deflection circuits of the receiver and cause the reproduced image to change in width. The described circuit operates to limit such undesired effects, both in the presence of these changes in beam current and, also, in the presence of variations in line voltage. A transistor referenced against ground potential is employed to develop a control voltage for the screen grid of the horizontal output tube and to provide the primary amplification needed to compensatingly offset these changes. Pulses developed across a secondary winding of the horizontal output transformer are monitored to establish the conduction state of the transistor to provide the desired control.

3,711,739
LIGHTING CONTROL CIRCUIT

William B. Maley, Orange, Conn., assignor to Techlite, Inc., Milford, Conn.

Filed Sept. 8, 1970, Ser. No. 70,329
Int. Cl. B60q *1/02*
U.S. Cl. 315—82 **11 Claims**

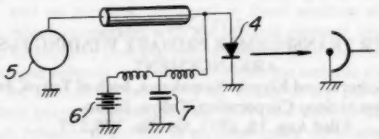


This disclosure relates to a series lamp circuit including a ballast resistance connected across a voltage source of E volts. Each of N lamps in the circuit is rated at E/N volts or less. When a voltage greater than E/N is sensed across a lamp, the resistance is substituted in the circuit therefor.

3,711,740
RESPONSE TIME CONTROLLED LIGHT EMITTING DEVICES

Satoshi Nakamura, Hachioji, and Junichi Umeda, Kodaira, both of Japan, assignors to Hitachi, Ltd, Tokyo, Japan

Filed Dec. 3, 1970, Ser. No. 94,767
Claims priority, application Japan, Dec. 5, 1969, 44/97179
Int. Cl. H05b *41/16*
U.S. Cl. 315—246 **5 Claims**

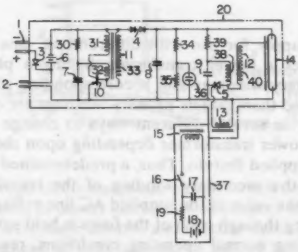


A light emitting diode capable of being arbitrarily controlled in its duration of light emission or delay time of light emission by having applied beforehand a voltage lower than the threshold voltage for light emission to the light emitting diode and by applying a driving input voltage thereto in superposing relationship to the previously applied voltage.

3,711,741
ELECTRONIC FLASH DEVICE

Hideaki Akiyama, and Sadanao Ando, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed March 1, 1971, Ser. No. 122,576
Int. Cl. H05b *31/04*, *37/00*
U.S. Cl. 315—241 P **9 Claims**

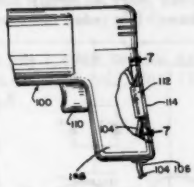


A completely water- and airtight electronic flash device is provided. The device is provided with casing molded of plastic, a rechargeable secondary battery having a voltage not higher than 30 volts, a diode in a charging circuit of the battery preventing the discharge of the battery when the charging circuit is shortcircuited by water or the like, and a trigger actuable by a signal generated by an electromagnetic trigger inductor for operating the flash device.

3,711,742
SYSTEM FOR PREVENTING ELECTROSTATIC SPARK DISCHARGE FROM A PERSON OPERATING AN ELECTRICAL APPLIANCE

Carl W. Pinkham, Jr., Stamford, Conn., assignor to Consolidated Foods Corporation, Old Greenwich, Conn.

Filed Feb. 22, 1971, Ser. No. 117,281
Int. Cl. H05f *3/00*
U.S. Cl. 317—2 R **5 Claims**

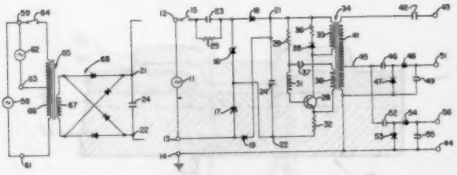


In accordance with the present invention, there is provided on the handle of a vacuum cleaner nozzle, or other electrical appliance, a member of conducting material so located as to be apt to be contacted at all times during use by the hand of the operator. This member is connected to both conductors of the 120 volt circuit of the appliance through a high loss dielectric material having resistivity high enough to prevent any significant current flow at 120 volts, either between the conductors or from either conductor to the person; but low enough to permit current flow at the high voltages of a static charge from the person to the conductors and at a rate sufficiently high to drain off the charge before the voltage reaches a high enough value to produce a spark discharge, but not at a rate sufficiently high to drain off an already accumulated high static charge rapidly enough to produce a spark discharge.

3,711,743
METHOD AND APPARATUS FOR GENERATING IONS AND CONTROLLING ELECTROSTATIC POTENTIALS

Robert E. Bolasny, Boulder, Colo., assignor to Research Corporation, New York, N.Y.

Filed April 14, 1971, Ser. No. 133,943
Int. Cl. H01t *19/00*, *19/04*
U.S. Cl. 317—3 **33 Claims**



Method and apparatus for producing ions in a highly efficient manner and with a minimum of ozone for utilization in electrostatic control units and the like. A generator produces character-controlled periodic oscillatory pulses of electric energy having positive and negative components of different amplitudes. The energy generated is dispersed into a surrounding gas by being applied to one or more ionizing points spaced a preselected distance from one another and from a ground plate to generate ions. In those forms of energy dispersing apparatus having the gas moved at a preselected

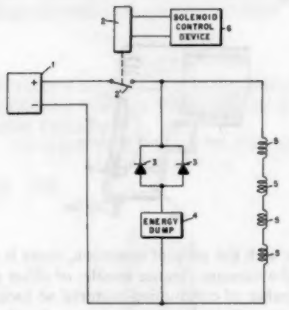
velocity the amount of ionization is substantially increased by reducing turbulence between the ionizing point and ground plate.

3,711,744

PASSIVE ENERGY DUMP FOR SUPERCONDUCTING COIL PROTECTION

James N. Luton, Jr., Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed June 1, 1972, Ser. No. 258,678
Int. Cl. H03k 3/38
U.S. Cl. 317—13 D 6 Claims



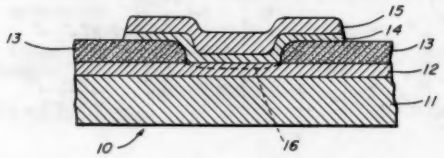
A passive resistance type energy dump for the protection of the coils of a superconducting magnet is provided. Insertion heaters are immersed in a rigid container filled with a fusible alloy. The energy dump is connected across the coils of the superconducting magnet wherein individual heater elements are connected singly to the windings or otherwise according to the energy dumping requirements upon transition of the magnet to a normal state.

3,711,745

LOW BARRIER HEIGHT GALLIUM ARSENIDE MICROWAVE SCHOTTKY DIODES USING GOLD-GERMANIUM ALLOY

William J. Moroney, Wenham, Mass., assignor to Microwave Associates, Inc., Burlington, Mass.

Filed Oct. 6, 1971, Ser. No. 187,053
Int. Cl. H01l 3/20
U.S. Cl. 317—235 R 10 Claims



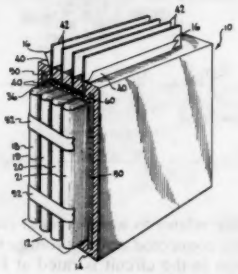
A gallium-arsenide Schottky barrier diode for microwave mixing and detecting with small local oscillator power has a rectifying metal-semiconductor contact made of an eutectic alloy of gold and germanium formed on the GaAs substrate while the latter is at a temperature below the eutectic for the Au-Ge alloy.

3,711,746

HIGH VOLTAGE ENERGY STORAGE CAPACITOR

William M. King, Spring Valley, Calif., assignor to Maxwell Laboratories, Inc., San Diego, Calif.

Filed June 16, 1971, Ser. No. 153,628
Int. Cl. H01g 3/28
U.S. Cl. 317—258 8 Claims



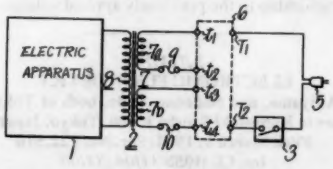
A capacitor comprising an electrode and dielectric assembly, a polyurethane body encapsulating the assembly, and terminal means for providing electrical connection with the assembly through the polyurethane body. The electrode and dielectric assembly comprises metal electrodes which are separated by an absorbent dielectric material impregnated with a liquid dielectric fluid. The capacitor may be made by impregnating the electrode and dielectric assembly with castor oil liquid dielectric, and subsequently encapsulating the impregnated assembly with polyurethane plastic.

3,711,747

POWER TRANSFORMER PRIMARY WINDING FUSE ARRANGEMENT

Hiroshi Sahara, and Kiyoshi Yamakawa, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 10, 1971, Ser. No. 170,577
Claims priority, application Japan, Aug. 13, 1970, 45/80941
Int. Cl. H02h 7/04
U.S. Cl. 317—15 7 Claims

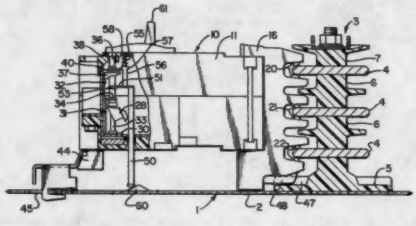


A power supply for use with different AC line voltages, which includes a power transformer having a plurality of separate primary windings and a corresponding plurality of fuses connected thereto. The primary windings are connected to each other in several different ways to change the turns ratio of the power transformer depending upon the value of the voltage supplied thereto. Thus, a predetermined voltage is produced in the secondary winding of the transformer irrespective of the value of the supplied AC line voltage and the current flowing through each of the fuses is held substantially constant, during normal operating conditions, regardless of the manner in which the separate primary windings are connected.

3,711,748
ELECTRIC PLUG-ON CIRCUIT BREAKER WITH MEANS FOR ASSURING TRIPPING OF THE BREAKER BEFORE UNPLUGGING

Robert E. Dietz, Cedar Rapids, Iowa, assignor to Square D Company, Park Ridge, Ill.

Filed May 7, 1971, Ser. No. 141,201
Int. Cl. H02b *1/04*
U.S. Cl. 317—112 **8 Claims**



A molded case electric circuit breaker has plug-on jaws at the line end arranged to plug onto edge portions of flat bus bars, stacked in spaced face to face relation, upon movement of the circuit breaker line and foremost along a fixed path on a mounting pan to a plugged position, and to disconnect from the bar upon opposite movement of the circuit breaker along said path.

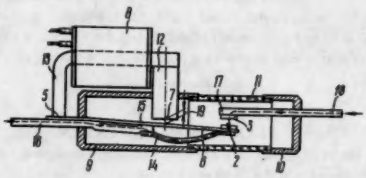
The breaker has a push-to-test pin accessible through a hole in its case for movement by an inserted tool to an operating position in which it rocks a trip bar to circuit breaker tripping position.

The breaker has a safety device comprising a settable element spring biased so that when released it moves to an operative position wherein it drives the pin to the pin operating position, and an element, arranged in fixed position along said path, which cooperates with the settable element and holds it in an inoperative position only while the jaws and bus bar are in plugged relation, and which releases the settable element so that the element is moved by its spring to the pin operating position prior to unplugging the jaws from the bus bars as the circuit breaker is moved in an unplugging direction from its plugged position, and at all times while the circuit breaker is removed from the pan.

3,711,749
REED SWITCH

Mark Germanovich Koblents, ulitsa Danilevskogo, 20, kv. 92; Gennady Feodosievich Mitskevich, ulitsa Chernyshevskogo, 95, kv. 58; Eduard Jurievich Polovets, Moskovsky prospekt, 196/1, kv. 60, and Anatoly Fedorovich Zhevago, Stadionny proezd, 6/6, kv. 13, all of Kharkov, U.S.S.R.

Filed Oct. 7, 1971, Ser. No. 187,312
Int. Cl. H01h *47/04, 51/28*
U.S. Cl. 317—155 **8 Claims**

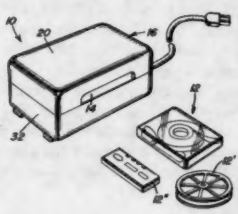


A reed type electromagnetic circuit switch designed mainly for operation in power circuits of switchgear installations, as well as in automatic control and electric drive systems where the power handled may amount to tens of thousands of voltamperes and rated currents may reach tens and hundreds of amperes; the current circuit of the reed switch is made up of solid current leads, a flexible shunt, and contact tips, manufactured from materials possessing high electrical conductivity. The arrangement includes an armature consisting of a ferromagnetic reed member and thinner ferromagnetic strips and provides for high electromagnetic pull and contact pressure, while a shield and a loop increase the reliability of the reed-to-reed insulation in the off-position and make it possible to develop most reliable and wear resistant contactors. An electromagnet is arranged to attract the armature, and has poles which are introduced into a sealed casing, while the coil of the electromagnet is disposed outside the casing.

3,711,750
DYNAMIC ANHYSTERETIC DEMAGNETIZATION APPARATUS HAVING POLE FACES PERPENDICULAR TO THE ROTATIONAL AXIS

Russell B. Huffman; Stuart J. Baker; Donald P. Grosslight, all of Northridge, and Aldren M. Pace, Reseda, all of Calif., assignors to Huffman and Baker and Grosslight and Pace, part interest to each

Filed July 2, 1969, Ser. No. 838,530
Int. Cl. G11b *5/02;* **H01f** *13/00*
U.S. Cl. 317—157.5 **5 Claims**

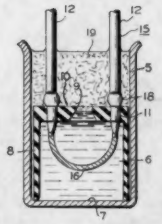


A magnetic tape with recorded data thereon is demagnetized and/or erased by being passed through an erasure zone having rotating magnetic fields. The magnetic fields have an intensity sufficient to saturate the recording medium and remain within the negative region of the hysteresis curve while remanent magnetism is removed.

3,711,751
ELECTROLYTIC TIMER DELAY CAPSULE

John Paul Jones, Jr., Wayne, Pa., assignor to Compuline Corporation, King of Prussia, Pa.

Filed Jan. 14, 1971, Ser. No. 106,481
Int. Cl. H01g *9/04*
U.S. Cl. 317—232 **10 Claims**



An electrolytic timer capsule is constructed of an outer cylindrical closed end case and an inner insulated upside down cup enclosing an electrolyte solution. The case comprises one electrode and the other is a U-shaped wire with an intermediate thin coined section immersed in the electrolyte solution.

3,711,752

SEMICONDUCTOR DEVICE AND METHOD OF ASSEMBLING THE SAME

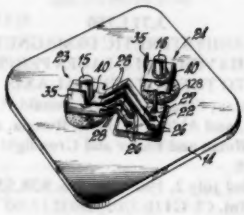
Johannes Nier, 7016 Gerlingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 23, 1970, Ser. No. 92,067

Claims priority, application Germany, Dec. 5, 1969, P 19 61 042.5

Int. Cl. H01l 5/00

U.S. Cl. 317—234 R 9 Claims



The parts of a semiconductor device are assembled in a composite jig whose base can locate the heat sink and whose parts-receiving block has cavities for the solder, semiconductor pellet and elastic metallic contacts provided with elastic tongues which engage terminals on the exposed surface of the pellet. The contacts are thereupon subjected to elastic deforming stresses to clamp them to the leads of the heat sink and to bias the tongues against the pellet. The thus assembled semiconductor device is withdrawn from the jig and conveyed through a soldering furnace wherein the contacts are bonded to the leads and to the terminals simultaneously with bonding of the pellet to the heat sink.

3,711,753

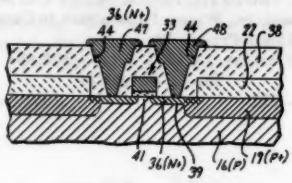
ENHANCEMENT MODE N-CHANNEL MOS STRUCTURE AND METHOD

Warren L. Brand, Cupertino, and Faraj Y. Kashkooli, San Jose, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed June 4, 1971, Ser. No. 149,944

Int. Cl. H01l 11/14

U.S. Cl. 317—235 R 4 Claims



Enhancement mode N-channel MOS structure having a semiconductor body with a region of P conductivity type formed in the body and extending to the surface. A polycrystalline gate structure is formed on said surface. Spaced source and drain regions are formed in the region of P conductivity type and form a channel in said body underlying said gate structure with the polycrystalline material of the gate structure having an N-type impurity therein. A layer of insulating material is formed on the surface and covers the gate structure. Contact elements are formed on the layer of insulating material and extend therethrough to make contact with the source and drain regions and said polycrystalline gate structure to form an active device.

In the method for fabricating the structure, the polycrystalline material of the polycrystalline gate structure is doped independently of doping for forming the channel underlying the polycrystalline gate structure.

3,711,754

CIRCUIT FOR DRIVING A MOVING ELEMENT

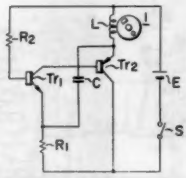
Kouji Nemoto, Ninomiya-1082, Akita-machi, Nishitoma-gun, Tokyo, Japan

Filed March 26, 1970, Ser. No. 22,804

Claims priority, application Japan, March 28, 1969, 44/23160

Int. Cl. H02k 33/00

U.S. Cl. 318—126 1 Claim



An electric circuit is disclosed for starting an output member in vibratory motion and maintaining the vibrations at a constant amplitude. A coil is electromagnetically coupled to the output member and performs both the driving and pick-up functions. The circuit includes two oppositely polarized transistors cooperating with a coupling capacitor to deliver current pulses of a relatively large pulse width to the coil to start the output member in vibratory motion. The pulse width is progressively decreased until the output member is vibrationally maintained at a constant amplitude and frequency.

3,711,755

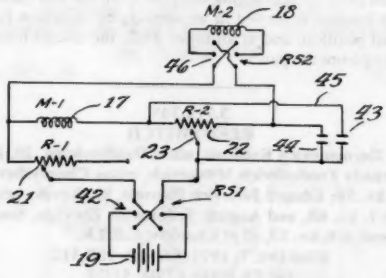
DC FISHING MOTOR SPEED AND STEERING CONTROL

Charles Paul Meyer, Jr., Bloomington, Ill., assignor to Jetco Electronic Industries, Inc., El Paso, Tex.

Filed Dec. 12, 1969, Ser. No. 884,498

Int. Cl. H02p 7/68

U.S. Cl. 318—139 6 Claims



A simplified resistive circuit for controlling the speed and steering of a boat. One resistance enables selection of an equal speed for both motors and a second resistance provides a differential in the voltage applied to the two motors to provide a differential speed of the two motors and steering of the boat.

3,711,756

PROGRAMMING SYSTEM

Mithutoshi Ogiso, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed June 10, 1970, Ser. No. 45,136

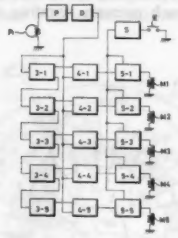
Claims priority, application Japan, June 12, 1969, 44/46596

Int. Cl. G05b 19/42

U.S. Cl. 318—162 8 Claims

A programming system for providing play-back from a number of reproduction media in accordance with a preset program, characterized in that pulses of different time inter-

vals are prepared in a corresponding relationship with respective reproduction media and are recorded on a program



recording material in sequence determined by a desired program.

3,711,757

AUTOMATIC SERVO SYSTEM FOR ELECTRIC CABLE MARKING MACHINES

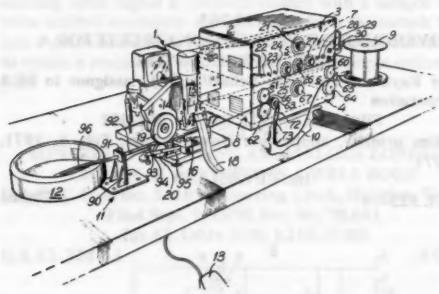
Jean Baptiste Marie Reforzo, Marseille, France, assignor to Societe Nationale Industrielle, Aerospatiale, Paris, Saine, France

Filed Jan. 15, 1971, Ser. No. 106,870

Claims priority, application France, Jan. 19, 1970, 7001775

Int. Cl. G05b *19/26*

U.S. Cl. 318—600 **7 Claims**



An automatic servo system for marking machines, comprising cable run measuring means positioned upstream of a marking machine, cable cutting means positioned downstream thereof, and an electronic unit for generating marking control signals, for changing the pitch of the marking and for cutting the cable, said unit being controlled by the cable run measuring means.

3,711,758

DEVICE FOR REMOTE-CONTROLLED RECIPROCAL EMISSION, TRANSMISSION AND RECEPTION OF MECHANICAL INFORMATION

Gilbert Lelandais, 7, avenue Marcel Hirbec, 78 Bois D'Arcy, France

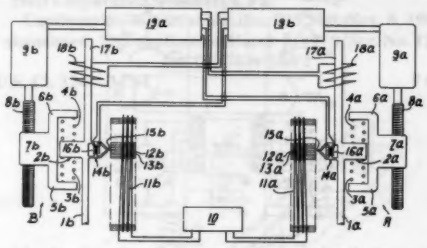
Filed June 21, 1971, Ser. No. 154,888

Claims priority, application France, June 24, 1970, 7023439

Int. Cl. G05b *11/01*

U.S. Cl. 318—675 **14 Claims**

In a device for the remote-controlled reciprocal emission, transmission and reception of mechanical information between two identical modules, each module comprises a position reader provided with a movable index which converts into successive electrical pulses an item of mechanical information relating to the motion of an actuating member which is associated with the index, a calibrated-compression spring mounted between a supporting carriage and the index so as to compress said spring, a mechanism for controlling the displacement of the supporting carriage parallel to the movement of the index and an indicator for indicating the direction of said movement, the mechanism for controlling one of the modules being actuated by the position reader and direction



indicator which are associated with the other module and conversely while causing the displacement of the corresponding supporting carriage so that the initial elongation of the spring should tend to be restored.

3,711,759

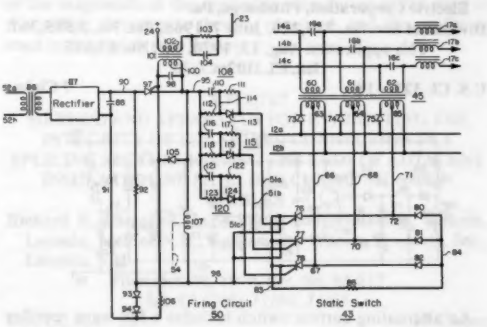
A-C ENERGIZING SYSTEM WITH STATIC INTERRUPTER

Stanley Krauthamer, Monterey Park, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed June 18, 1971, Ser. No. 154,382

Int. Cl. H02m *1/18;* **H02h** *7/14*

U.S. Cl. 321—14 **3 Claims**



A system for energizing an AC load from an inverter, or from other single- or multi-phase power sources or combination thereof, includes a series filter comprising a capacitor coupled in series with an inductor. The filter elements are resonant at the normal operating frequency of the inverter. Responsive to a large overload or a fault condition in the system, a virtual short circuit is applied across one of the filter components to detune the filter. Alternatively if a load exceeding a specified value is applied, a clamp detunes the filter. This significantly increases the effective impedance seen by the inverter or other power sources, protecting the system against excess currents.

3,711,760

RECTIFIER-TRANSFORMER SYSTEM

Francis D. Kaiser, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

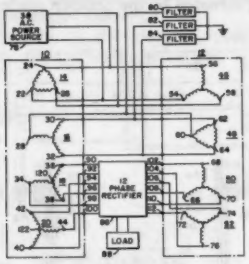
Filed June 30, 1971, Ser. No. 158,434

Int. Cl. H02m *7/00;* **H01f** *33/00*

U.S. Cl. 321—5 **4 Claims**

Electrical inductive apparatus for supplying polyphase power to a polyphase rectifier. Two six-phase transformers are interconnected with their primary windings in parallel circuit

relationship. Tertiary windings on each transformer are interconnected and connected to a harmonic filter. Multiple secondaries furnish twelve-phase power to a rectifying unit. The



secondary winding bus conductors and the secondary bushing terminals may be arranged so that adjacent conducting elements carry currents which are antiphase to reduce eddy currents and inductive heating.

ERRATUM

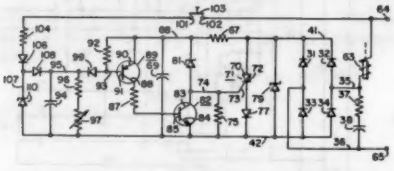
For Class 321—57 see:
Patent No. 3,711,762

3,711,761

OFF DELAY TIMER AND INTERNALLY GENERATED AUXILIARY DIRECT CURRENT VOLTAGE SOURCE FOR A CONTROLLED RECTIFIER ALTERNATING CURRENT SWITCH FOR USE THEREIN

Guido Watson, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburge, Pa.

Division of Ser. No. 735,226, June 7, 1968, Pat. No. 3,555,367.
This application Aug. 13, 1970, Ser. No. 63,655
Int. Cl. H02m *7/20*
U.S. Cl. 321—18 **7 Claims**



An alternating current switch includes a full-wave rectifier with one input terminal thereof connected to an alternating current line, and the other input terminal connected by way of a load impedance to the alternating current line, with a controlled rectifier connected across the output of the full wave rectifier and while conducting providing for the flow of current through the load impedance and while nonconducting preventing the flow of current through the load impedance, with a Zener diode connecting the control element of the controlled rectifier to the anode thereof whereby a gate drive for gating the controlled rectifier on is obtained only when the voltage across the Zener diode is sufficient to cause the Zener diode to become conductive.

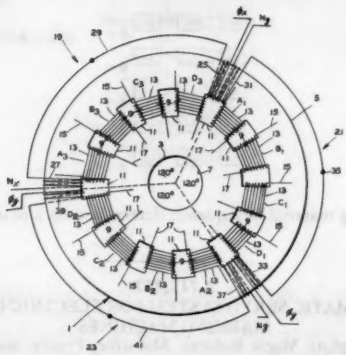
3,711,762

POLYPHASE TRANSFORMER FOR A VARIABLE SPEED CONSTANT FREQUENCY SYSTEM

Robert Charles Eckenfelder, Point Pleasant; Robert Frederick Kautz, Spring Lake, and Albert William Compoly, Wall, all of N.J., assignors to The Bendix Corporation

Filed March 2, 1971, Ser. No. 120,156
Int. Cl. H02m *5/10*
U.S. Cl. 321—57 **20 Claims**

A transformer provides *n* phase outputs from *m* phase input voltages and comprises a core of magnetically permeable material having two shells connected by symmetrically arranged teeth. The number of teeth is a multiple of *m*, the number of phase voltages and of *n* the number of phase outputs. Wound on the teeth are *m* primary windings symmetrically arranged and each primary winding is energized by a



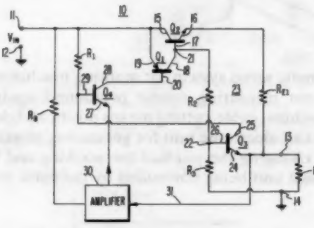
phase voltage. *n* secondary windings are arranged on the core so that an output voltage is induced in each secondary winding and the secondary windings are positioned relative to one another in accordance with the desired phase angle separation of the outputs.

3,711,763

OVERCURRENT PROTECTION CIRCUIT FOR A VOLTAGE REGULATOR

Walter Raymond Peterson, Belleville, N.J., assignor to RCA Corporation

Filed Nov. 5, 1971, Ser. No. 196,021
Claims priority, application Great Britain, Feb. 1, 1971, 3,604/71
Int. Cl. G05f *1/58*
U.S. Cl. 323—9 **5 Claims**



An overcurrent protection network for a voltage regulator including a bridge network in circuit with the regulating element and the output terminals, a normally non-conductive device in circuit with the bridge network and a variable impedance device in circuit with the regulating element and responsive to the normally non-conductive device for reducing the load current upon the occurrence of conditions which would tend to cause the load current to rise above a predetermined maximum value.

3,711,764

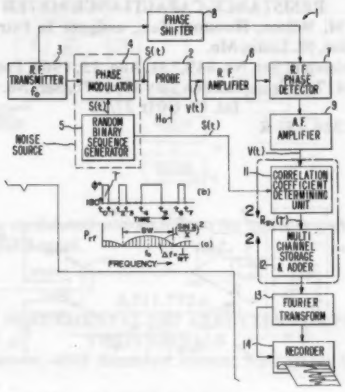
NOISE EXCITED RESONANCE APPARATUS

Richard R. Ernst, Winterthur, Switzerland, assignor to Varian Associates, Palo Alto, Calif.

Filed May 28, 1970, Ser. No. 41,417
Int. Cl. G01n *27/78*
U.S. Cl. 324—.5 R **9 Claims**

Noise excited radio frequency spectrometers are disclosed wherein resonance of a sample of matter disposed in a polariz-

ing magnetic field is excited by applying noise energy to the sample to excite a spectrum of resonance lines within the sample under analysis. In one embodiment, a sample of the exciting noise is Fourier transformed and a sample of the resultant noise excited spectrum of the sample is similarly Fourier transformed and the two Fourier transformed functions are multiplied to derive a resonance spectrum of the sample under analysis. In another embodiment, a sample of the resonance exciting noise signal is cross-correlated with a sample of the noise excited resonance signal derived from the sample to obtain a cross-correlation function which is Fourier transformed to obtain a resonance line spectrum of the sample under analysis.

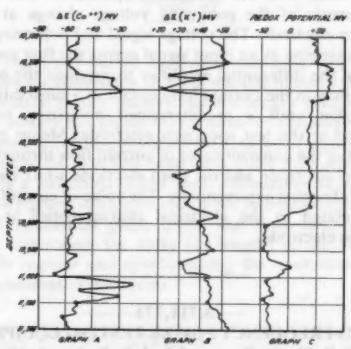


3,711,765

METHOD OF LOCATING ANOMALOUS ZONES OF CHEMICAL ACTIVITY IN A WELL BORE

Harold L. Overton, 5418 Whispering Creek, Houston, Tex.

Filed Sept. 9, 1970, Ser. No. 70,661
Int. Cl. G01v *3/00*; E21b *49/00*
U.S. Cl. 324—1 **8 Claims**



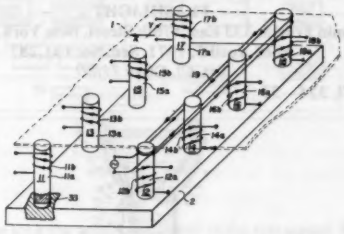
A method of locating anomalous zones of chemical activity in a well bore by measuring one or more cationic potentials and the redox (reduction-oxidation) potential of shale cuttings obtained from the well bore at different elevations during the drilling thereof, and graphically representing the different values to obtain comparisons which are indicative of the location of petroleum formations in the well bore.

3,711,766

METHOD AND APPARATUS FOR USE IN MEASURING RESULTANT TENSION FORCES IN STEEL STRIP BY SEQUENTIALLY ESTABLISHING FLUX PATHS ACROSS SAID STRIP

John R. Dahm, Pittsburgh, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 773,500, Nov. 5, 1968, abandoned. This application March 2, 1970, Ser. No. 15,452
Int. Cl. G01r *33/12*
U.S. Cl. 324—34 ST **7 Claims**



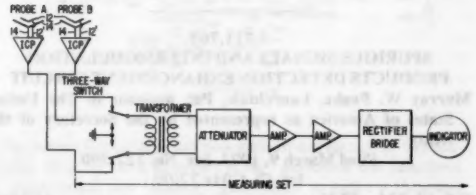
A series of sets of magnetic flux flow paths are sequentially established and passed through a ferromagnetic steel strip being rolled under tension. Each set of paths in the series acts to develop a resultant magnetic flux which is a measure of the average tension in the rolling direction in that portion of the strip through which a particular set of paths passes. The series of sets of paths are established in abutting relation across the width of the strip so that all stresses in the strip across its width are taken into account. A profile across the width of the strip of the magnitude of the applied tension forces in the strip in the rolling direction is thereby obtained, and the profile is used to determine strip flatness.

3,711,767

METHOD AND APPARATUS FOR EVALUATING THE INTEGRITY OF THE SHIELD CONNECTION IN A SPLICING SECTION JOINING THE ENDS OF ADJACENT INSULATED AND SHIELDED COMMUNICATION CABLES

Richard H. Campbell, Jr., Gilford, and William B. Wilkens, Laconia, both of N.H., assignors to Wilcom Products, Inc., Laconia, N.H.

Filed Oct. 30, 1970, Ser. No. 85,617
Int. Cl. G01r *31/04*, *31/08*
U.S. Cl. 324—51 **17 Claims**



This invention provides an effective method and apparatus for testing the continuity of the shielding in communication cables, such as telephone cables, and for locating sections thereof which are defective and require repairs; without puncturing or damaging the cable insulation. The apparatus system embraces two identical probes designed for convenient application to the opposite ends of the splicing section to be tested. Each probe embraces a pickup electrode and an electronic impedance converting circuit. Noise signals induced on the cable shield from an exterior source, are capacitively coupled, through the cable insulation, to the pickup electrode on each

probe, and then processed through an ultra high unity gain impedance converting circuit in the probe head and into a low impedance signal. The output from the two probes are connected through a switch to the input transformer of a measuring set which also includes an attenuator and appropriate operational amplifiers. A bridge rectifier meter circuit with an appropriate damping capacitor provides the means for measuring the signal level.

3,711,768

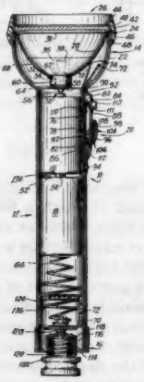
COMBINED ELECTRIC CONTINUITY CHECKER AND FLASHLIGHT

Benjamin Frazin, 333 East 176th Street, New York, N.Y.

Filed April 5, 1971, Ser. No. 131,287

Int. Cl. G01r *31/00*

U.S. Cl. 324—53 **6 Claims**



Combined flashlight and continuity checker having a generally tubular body for containing one or more flashlight cells provided with a lamp head at one end portion for projecting a beam of light forwardly of the housing having a colored light transmitting rim to enable a lighted condition to be visually observed from a wide angle; a switch mounted at the side of the housing for manual operation of the lamp head; and a socket at the other end portion of the housing connected in parallel with the switch for receiving plug bodies, such as plug-type fuses therewithin to indicate the presence or absence of a complete circuit therethrough by the lighted or non-lighted condition of the lamp head. Adaptors may be provided for checking different types of plug fuses and for providing test leads which may be used for checking continuity of other electrical devices.

3,711,769

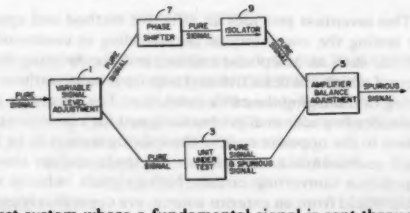
SPURIOUS SIGNALS AND INTERMODULATION PRODUCTS DETECTION ENHANCEMENT CIRCUIT

Murray W. Peake, Laureldale, Pa., assignor to The United States of America as represented by the Secretary of the Army

Filed March 9, 1971, Ser. No. 122,390

Int. Cl. G01r *27/00*

U.S. Cl. 324—57 N **4 Claims**



A test system where a fundamental signal is sent through a unit to be tested and at the same time this signal is sent around said unit to be tested and shifted a 180° in phase with respect to output of unit. The two signals are then combined to eliminate the fundamental, and the spurious signal is measured by a spectrum analyzer.

3,711,770

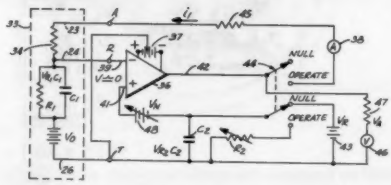
RESISTANCE-CAPACITANCE METER

Homer M. Wilson, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 849,734, Aug. 15, 1969, Pat. No. 3,616,417. This application July 19, 1971, Ser. No. 163,792

Int. Cl. G01r *27/00*

U.S. Cl. 324—57 R **2 Claims**



A meter for measuring electrical characteristics of a load including resistance R and capacitance C with metallic electrodes contactable by an aqueous liquid, including a test specimen electrode, a reference electrode and a third or auxiliary electrode. A current loop circuit connects the test specimen and third electrodes to a first input and common output of a differential amplifier and a direct current supply means. Polarizing current in the current loop circuit passes through the third electrode and the test specimen electrode to produce an exponential voltage change at the test specimen electrode with a time constant of resistance and capacitance about this electrode. A voltage loop circuit connects the test specimen electrode and the reference electrode between the first and second inputs of the differential amplifier. A signal generating source in the voltage loop circuit produces a voltage signal changing exponentially from a first value to a second value with the resistance-capacitance time constant characteristic of the polarizing voltage change at the test specimen electrode. The voltage signal and polarizing voltage change combine as an input signal across the first and second inputs of the differential amplifier to produce the polarizing current flow in the current loop circuit at a substantially constant value until a predetermined polarizing voltage is generated at the test specimen electrode. Means provide a read-out of the constant value of current flow through the test specimen electrode and the third electrode while the voltage signal is changing exponentially. The value of current flow can be correlated to the electrical characteristics at the test specimen electrode.

3,711,771

RADIO-FREQUENCY POWER TESTING EQUIPMENT

Frederick R. Hume, Brea, and Jack B. Seaton, Anaheim, both of Calif., assignors to North American Rockwell Corporation

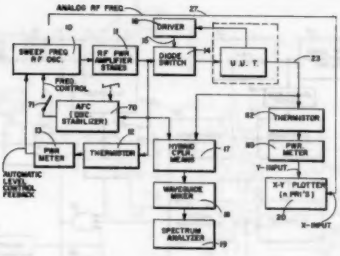
Filed Nov. 1, 1971, Ser. No. 194,365

Int. Cl. G01r *27/00*

U.S. Cl. 324—57 R **10 Claims**

Method and apparatus for measuring the peak power performance of a pulsed microwave power device as a unit-under-test, in which there is provided means for driving the unit-under-test with a constant power-level, swept-frequency source of RF energy as an applied input, and in which there is also provided means for pulse modulating the applied input.

There is further provided means responsive to the time-averaged power output, pulse repetition rate and pulse width



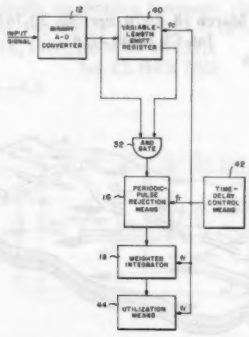
of the pulse modulated unit-under-test for indicating the peak power output thereof.

3,711,772

DIGITAL FUNDAMENTAL PRP ANALYZER FOR PULSE TRAIN SIGNALS

Bruce J. Brown, 4801 Kenmore Avenue, Apt. 1022, Alexandria, Va.

Filed Dec. 14, 1971, Ser. No. 207,756
Int. Cl. G01n *23/02*; **G06f** *15/20*; **H03b** *1/04*
U.S. Cl. 324—78 D **10 Claims**



A pulse-repetition-period analyzer comprising binary converter means for converting an input waveform into a series of equal-amplitude binary pulses, variable-length shift register means for sorting the pulses into a series of successive pulse trains ordered according to their pulse repetition periods, shift register means for rejecting from each pulse train any pulses constituting a harmonic rather than a fundamental signal at the input, weighted integrator means for individually integrating said fundamental pulse trains and time-delay control means for controlling the delay (or length) of the variable-length shift register and synchronizing the operation of the other components of the circuit.

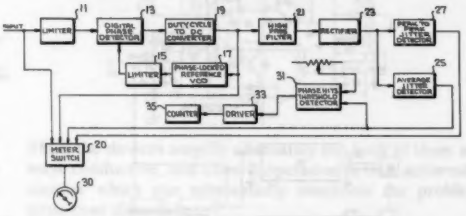
3,711,773

PHASE JITTER METER

Norris C. Hekimian, Rockville, Md., and John L. Kelly, Washington, D.C., assignors to Hekimian Laboratories, Inc., Rockville, Md.

Filed July 9, 1970, Ser. No. 53,531
Int. Cl. G01r *25/00*; **H03d** *13/00*
U.S. Cl. 324—83 R **22 Claims**

A system is disclosed for monitoring short term amplitude and phase variations and measuring average and peak-to-peak phase jitter experienced by a test signal transmitted through a system under test. Phase detection is achieved with an exclusive OR gate which compares the phase of the test signal with that of a reference signal provided by a voltage-controlled oscillator (VCO), and provides an output signal having a frequency twice that of the test signal and a duty cycle proportional to test signal phase displacement. This output signal is converted to a DC signal which, in addition to serving as a basis for measurement of the average and peak-to-peak phase jitter of the test signal, controls the phase of the VCO to



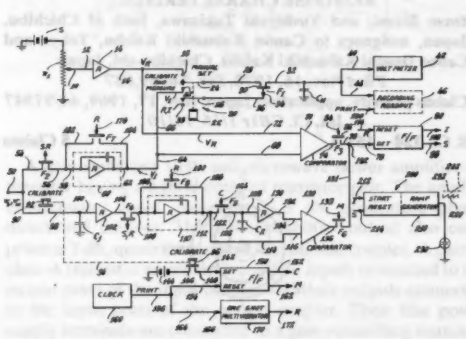
thereby phase lock the reference signal to the test signal. Short term amplitude variations experienced by the test signal are compared against an adjustable predetermined range in order to provide an indication whenever the amplitude is outside the selected range. A novel test signal generator is also disclosed using a modified Hartley oscillator configuration to provide an output signal having high amplitude and frequency stability independently of the type of transistor employed.

3,711,774

AUTOMATIC GAIN CALIBRATION

Walter Bohler, Norwalk, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed March 1, 1971, Ser. No. 119,585
Int. Cl. G01r *15/08*, *1/38*
U.S. Cl. 324—115 **8 Claims**



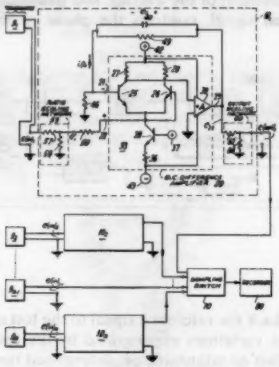
Apparatus for causing unknown electrical signals to be measurable directly on a desired "scale" performs the functions of: determining the "scaling" gain factor to make a (known) standard electrical signal equal a (manually set) particular voltage level; storing this gain factor; subsequently regenerating the stored gain factor; and applying this regenerated gain factor to an unknown electrical signal. The disclosed embodiment determines the desired gain factor by integrating the standard signal until it equals the manually set voltage level, stores this integration time factor by a second integrator integrating the same standard input signal for the same time and preserving the integrated output value at the end of this timing, regenerates this integration time by the second integrator integrating again the same input until it reaches the value of the previously preserved output, and causes the first integrator to integrate the unknown signal during this same regenerated integration time (as determined by the second integrator).

3,711,775

SIGNAL TRANSLATING CIRCUIT FOR PASSING VERY LOW FREQUENCY INFORMATION

Stephen B. Judlowe, 47 Sagamore Drive, Murray Hill, N.J.

Filed Dec. 8, 1969, Ser. No. 882,910
Int. Cl. G01r *1/30, 13/04*
U.S. Cl. 324—123 R 8 Claims



Circuitry for passing the very low frequency information content of an infrequently sampled analog signal while rejecting concomitant noise and spurious transient voltages includes a difference amplifier having a feedback resistor-capacitor and input signal coupling and scaling circuitry for providing a very slow and stable characteristic response to an input analog signal.

When employed in conjunction with a plural transducer channel, sampled data system, the circuitry avoids data scattering which otherwise obtains.

3,711,776

CORE-MAGNET TYPE INSTRUMENT HAVING LINEAR RESPONSE CHARACTERISTIC

Tetsuzo Inami, and Yoshiyuki Takizawa, both of Chichibu, Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Canon Denshi Kabushiki Kaisha, Chichibu-shi, Japan

Filed Nov. 16, 1970, Ser. No. 89,687
Claims priority, application Japan, Nov. 17, 1969, 44/91947
Int. Cl. G01r *1/16, 15/10*
U.S. Cl. 324—151 A 5 Claims

A core magnet type instrument which renders a linear response characteristic comprises a magnet core, a yoke surrounding and spaced apart from the magnet core to form an air gap therebetween, and a moving coil movable in the air gap and having a pointer. The magnet core is shaped into an ellipse to improve a response characteristic of the instrument.

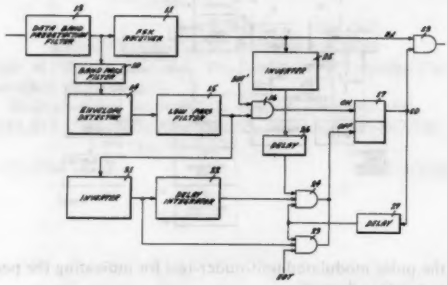
3,711,777

LATCHING AND CONTROL CIRCUIT FOR CARRIER DETECTION

Robert M. Tink, San Diego, Calif., assignor to The National Cash Register Company, Dayton, Ohio

Filed Sept. 16, 1971, Ser. No. 181,166
Int. Cl. H04l *27/14*
U.S. Cl. 325—320 11 Claims

A carrier detection circuit for a modem receiver wherein a carrier detect flip-flop is latched upon receipt of initial mark signals of a message. Logic circuits responsive to end-of-transmission signals, noise and signal drop-out control turn-off of the flip-flop. Probability of turn-off due to noise is reduced by



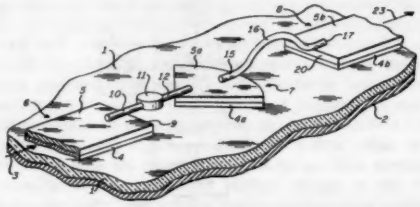
delaying turn-off signals due to noise, whereby only a message end code causes rapid turn-off. In addition, a circuit is provided requiring the received signal be in a marking state to enable a fast turn-off.

3,711,778

MICROWAVE MICROCIRCUIT

William B. Day, Dunedin, Fla., assignor to Sperry Rand Corporation

Filed March 18, 1970, Ser. No. 20,763
Int. Cl. H04b *1/16*
U.S. Cl. 325—446 1 Claim



A high frequency or microwave microcircuit device is disclosed having application as an integrated circuit element for electromagnetic signal frequency conversion performing, for example, frequency conversion functions such as signal mixing or signal detection. The novel microcircuit element is particularly adapted for use in planar integrated microstrip transmission line systems.

3,711,779

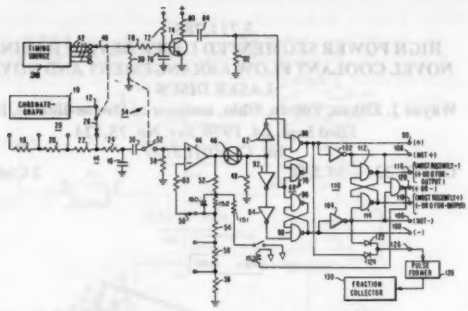
APPARATUS FOR DETERMINING AND CHARACTERIZING THE SLOPES OF TIME-VARYING SIGNALS

Robert W. Allington, Lincoln, Nebr., assignor to Instrumentation Specialties Company, Lincoln, Nebr.

Filed Nov. 17, 1970, Ser. No. 90,252
Int. Cl. H03k *5/20, 5/18*
U.S. Cl. 328—114 17 Claims

At discrete time intervals, a clocked switch stores successive samples of a signal, whose slope is to be determined, across a capacitor. Amplifying means measure the capacitor charging current that changes the storage level at each interval. A positive or negative signal slope is sensed when the measured charging current exceeds predetermined positive or

negative threshold levels. Logic means furnish outputs at separate terminals that indicate the slope to be positive, not

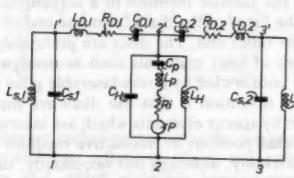


positive, negative, not negative, most recently positive, and most recently negative.

3,711,780
NONRECIPROCAL REACTANCE AMPLIFIER ARRANGEMENT

Robert Maurer, Neureut near Karlsruhe, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Oct. 14, 1970, Ser. No. 80,655
Claims priority, application Germany, Oct. 16, 1969, P 19 52 138.1; Oct. 16, 1969, P 19 52 134.7; Oct. 16, 1969, P 19 52 135.8; Oct. 16, 1969, HGM 69 40 259.1
Int. Cl. H03f 7/00
U.S. Cl. 330—4.5 **11 Claims**



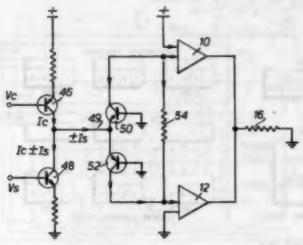
A non-reciprocal reactance amplifier arrangement comprising the cascade connection of an up-converter or mixer and a down-converter or mixer whose reactance diodes are pumped in opposite phase by a common pump generator and are coupled together by a common auxiliary or idler circuit. The amplifier arrangement is provided with a broadband decoupling in the reverse direction and a simultaneous broadband transmission is the forward direction by designing the auxiliary circuit so that its transmission or band pass characteristic exhibits a supercritical course or wave form for the lower sideband and a subcritical course for the upper sideband.

3,711,781
ELECTRICAL AMPLIFIER ARRANGEMENTS

Peter F. Blomley, Towcester, England, assignor to The Plessey Company Limited, Ilford, England

Filed Nov. 3, 1970, Ser. No. 86,454
Claims priority, application Great Britain, Nov. 4, 1969, 53,916/69
Int. Cl. H03f 3/26
U.S. Cl. 330—15 **8 Claims**

Two amplifier devices are connected in a push-pull output configuration, and are both biased to a conductive point at the beginning of the linear portion of their transfer characteristics. The input signal to be amplified is applied to the amplifier devices through input means, such asidiodes, which are so poled as to prevent the application of the input signal to either device when the polarity of the input signal, relative to a datum, is such that it would bias that device out of conduction.

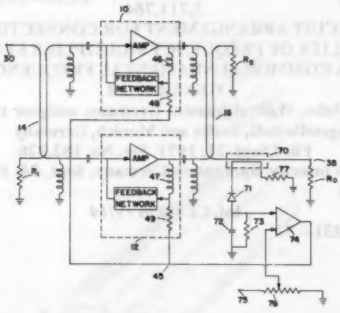


Thus, the devices amplify alternately but both of them are always conductive, and class B operation is thus achieved in a manner which can substantially overcome the problem of cross-over distortion.

3,711,782
VHF AND MICROWAVE AMPLIFIER HAVING IMPROVED STABILITY AND CONTROLLABLE GAIN

George Perrero, and Carroll E. Weller, both of Cincinnati, Ohio, assignors to Avco Corporation, Cincinnati, Ohio

Filed Jan. 26, 1971, Ser. No. 109,840
Int. Cl. H03f 3/68; H01p 5/12
U.S. Cl. 330—30 R **14 Claims**



A gain stabilized VHF and microwave power amplifier-attenuator having a hybrid coupled transistor pair. The amplifier-attenuator input comprises a 3 db, quadrature phase, directional coupler. The power amplifier output also comprises a 3 db, quadrature phase, directional coupler. A pair of class-A transistor amplifiers have their inputs connected to the output ports of the input coupler and their outputs connected to the input ports of the output coupler. Their bias power supply terminals are connected to a gain controlling source of bias power. Each of the transistor amplifiers has a feedback loop which comprises a zener diode operating in its zener region which is conductively connected from the output terminal of the amplifier to the input terminal of the amplifier. The gain of the amplifiers is stabilized by circuitry which automatically controls the voltage applied to the bias power supply terminals.

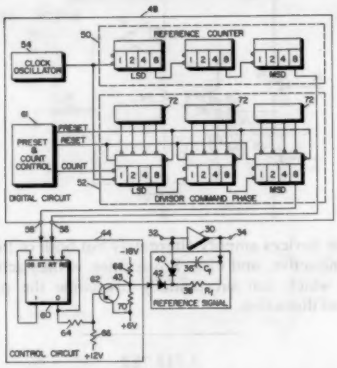
3,711,783
DIVISION WITH PULSE WIDTH MODULATION

Leroy U. C. Kelling, Waynesboro, Va., assignor to General Electric Company

Filed Dec. 23, 1970, Ser. No. 100,920
Int. Cl. H03g 3/30
U.S. Cl. 330—86 **12 Claims**

A system for digitally controlling an amplifier wherein the transfer function of the amplifier is time modulated in accordance with a selectable digital number to make the amplifi-

er gain an inverse function of the magnitude represented by the digital number. The digital number is preset into a digital



circuit which controls the switching of a signal feedback impedance into and out of the feedback path of the amplifier on a time basis determined by the preset number.

3,711,784

CIRCUIT ARRANGEMENT FOR CONNECTING A PLURALITY OF FREQUENCY MULTIPLIER STAGES TO A COMMON FUNDAMENTAL FREQUENCY GENERATOR

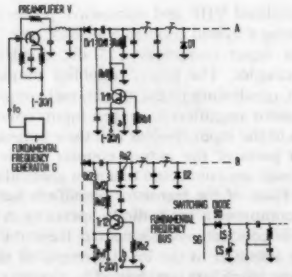
Rudolf Heise, Wolfratshausen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 21, 1971, Ser. No. 182,326

Claims priority, application Germany, Sept. 24, 1970, P 20 47 145.8

Int. Cl. H03b *19/14*

U.S. Cl. 331—53 **9 Claims**



A circuit arrangement connects a plurality of frequency multiplier stages, each producing a different output frequency, and only one of which operates at a specific time, to a common fundamental frequency generator. Each of a plurality of switching diodes couples the input of a corresponding one of the frequency multiplier stages to the fundamental frequency generator. Each of a plurality of bandpass filters is tuned to a different corresponding harmonic and each couples the output of corresponding one of the frequency multiplier stages to a common output terminal. A current supply is connected to the switching diodes for supplying current to the fundamental frequency generator via the switching diode of the operating frequency multiplier stage.

3,711,785

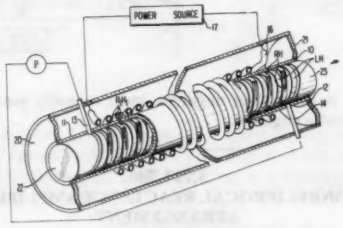
HIGH POWER SEGMENTED LASER DEVICE HAVING NOVEL COOLANT FLOW ARRANGEMENT AND NOVEL LASER DISCS

Wayne J. Zitkus, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Sept. 24, 1970, Ser. No. 75,124

Int. Cl. H01r *3/00*

U.S. Cl. 331—94.5 O **2 Claims**



There is disclosed a laser device in which a plurality of solid laser discs are supported in stacked, spaced relation along their optical axis in an imperforate, elongated tubular member, the discs being planar and having a perimetrical configuration relative to the cross-sectional configuration of the imperforated tubular member such that a coolant admitted to one end of the imperforate tubular member is caused to axially traverse the tubular member in a serpentine or sinuous path across the faces of the discs from one end of the tubular member to the other end. The discs are preferably composed of a solid core of laser materials such as neodymium doped glass and the core is clad by a non-laserable glass material. A feature of the invention is that the discs are maintained in space relation by spacer elements which are inserted in closed bores in the clad portions or non-active medium portions of the discs. Preferably, although not necessarily, the discs are cut from a solid rod of material and at Brewster's angle so that when mounted in the tube, the discs will be at Brewster's angle. Some of the laser discs are relieved at alternate side portions thereof in the glass cladding to form righthand or lefthand members, each being alternated in the stacks to form the serpentine path for coolant to flow. In order to lower the pressure drop with respect to the coolant fluid flowing through the tube, in addition to lefthanded and righthanded laser discs as in the prior art, the invention features neutral discs which are inserted between left and right-hand elements so as to provide at least one parallel path flow for the coolant fluid in its serpentine flow throughout the length of the imperforate tube.

3,711,786

DETERMINATION OF THE FREQUENCY OF LASER RADIATION

Philippe Jean Vautier, and Jean Yves Coester, both of Paris, France, assignors to Societe Anonyme De Telecommunications, Paris, France

Filed Dec. 1, 1970, Ser. No. 93,930

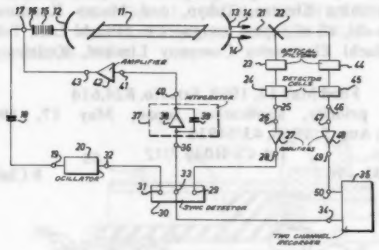
Claims priority, application France, Dec. 5, 1969, 6942107; Feb. 5, 1970, 7004088

Int. Cl. H01s *3/10*

U.S. Cl. 331—44.5 **3 Claims**

A method enabling the frequency of the radiation emitted by a multi-frequency CO_2 laser to be determined with preci-

sion by adjusting the optical length of the resonant cavity, so as to be a multiple of the wavelengths of the two beams



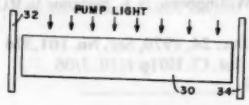
emitted, and so as to obtain a central dip in the power curve for one of the beams.

3,711,787

NEODYMIUM GLASS LASER HAVING ROOM TEMPERATURE OUTPUT AT WAVELENGTHS SHORTER THAN 1,060 NM

Elias Snitzer, Wellesley; Charles C. Robinson, Sturbridge, both of Mass., and Richard F. Woodcock, Woodstock, Conn., assignors to American Optical Corporation, Southbridge, Mass.

Filed March 10, 1971, Ser. No. 122,724
Int. Cl. H01s *3/16*
U.S. Cl. 331—94.5 **8 Claims**



A laser device including an optically resonant laser cavity formed by dichroic reflectors which are reflective at 920 nanometers and which suppress laser emission at 1,060 nanometers. The device contains a glass host doped with a laserable quantity of neodymium ions in a low concentration (viz. 0.1 to 3 wt percent) which results in the glass exhibiting a ratio of fluorescent intensity peaked at approximately 920 nanometers over the fluorescent intensity peaked at approximately 1,060 nanometers of at least 0.4 as measured by a Cary Model 14 spectrophotometer. The combination of cavity and host results in a laser device which is capable of emitting light energy by stimulated emission at room temperature in a waveband with an optical center at about 920 nanometers.

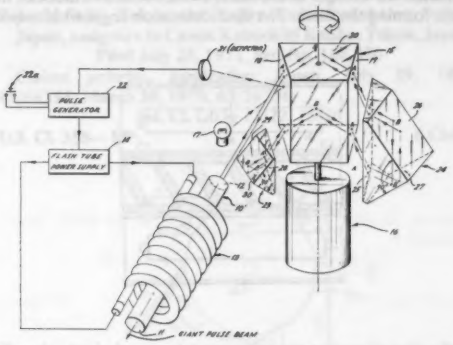
3,711,788

LASER APPARATUS

John F. Forkner, Plymouth Meeting, Pa., assignor to Philco-Ford Corporation, Blue Bell, Pa.

Division of Ser. No. 346,820, Feb. 24, 1964, Pat. No. 3,434,073. This application Feb. 27, 1969, Ser. No. 842,036
Int. Cl. H01s *3/11*
U.S. Cl. 331—94.5 **20 Claims**

A relatively high-speed optical shutter for use in the optical system of a laser for greatly increasing its peak power output. In one aspect, the optical shutter comprises a system of prisms arranged to cause multiple impingement of the internal laser beam on a rotatable mirror, whereby to multiply the angular sweep rate of the laser beam as it is reflected back into the laser medium. In another aspect, the optical shutter includes a telescope arranged to increase the apparent rotational speed of the mirror, and hence the angular sweep rate of the beam, by magnifying the width of the beam reflected back into the laser medium.

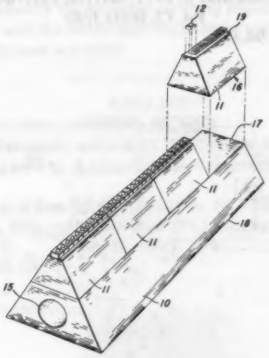


3,711,789

DIODE ARRAY ASSEMBLY FOR DIODE PUMPED LASERS

Eugene Gustav Dierschke, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 18, 1970, Ser. No. 90,596
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 P **18 Claims**



A diode array assembly having excellent thermal characteristics for the removal of heat from the diodes permits high packing density of diodes around a laser rod and requires only one or more diodes to be committed to a header of the assembly. The assembly is comprised of a thermally conductive monolithic support member having coolant passage formed through it. A plurality of thermally conductive headers are bonded on a surface of the support member to provide good thermal conduction from the headers to the support member. One or more light emitting diodes are mounted on each header such that the diodes form a substantially straight line along the assembly. Several such modular assemblies are then mounted around the laser rod.

3,711,790

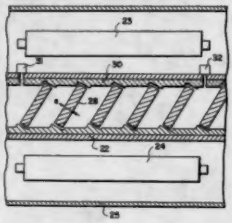
SEGMENTED GLASS LASER

Francois F. Gans, 38 rue Gustave Vatonne, Gif-sur-Yvette, France

Filed April 7, 1971, Ser. No. 131,986
Int. Cl. H01s *3/06*
U.S. Cl. 331—94.5 **2 Claims**

Laser device of the neodymium doped glass disc array type. The discs are spaced apart from one another and are im-

mersed in a liquid whose refractive index is equal, for the emission wavelength of the laser, to the refractive index of the glass forming the discs. The disc inclination angle with respect



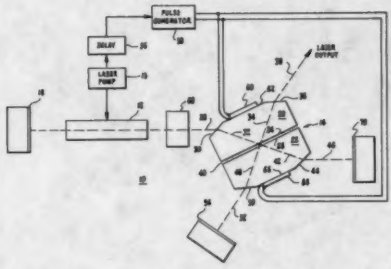
to the disc alignment direction can take any desired value. To pump the discs in the whole volume thereof, the spacing is given a value higher than a predetermined minimal value and an inclination angle of 45° is selected.

3,711,791

FRUSTRATED TOTAL INTERNAL REFLECTION LASER Q-SWITCH

Allen M. Erickson, 12409 Eastbourne Drive, Silver Spring, Md.

Filed May 3, 1971, Ser. No. 139,764
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 Q **8 Claims**



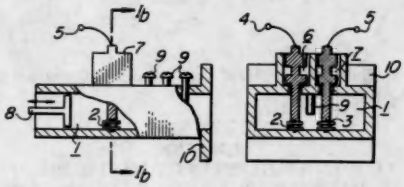
A demand synchronized laser Q-switch of high optical efficiency and fast operation includes two prisms of fused quartz separated by a fraction of a wavelength of the laser light to be Q-switched and piezoelectric transducers mounted on the back sides of each prism. With no electrical signal applied to the piezoelectric transducers the prism separation produces frustrated total internal reflection that prevents laser oscillations between the two end mirrors of a laser cavity. Application of a voltage pulse to the piezoelectric transducers produces a shock wave in each prism that drives them into physical contact. The prisms then separate rapidly in response to reflection of the shock wave. When the prisms are sufficiently separated, laser oscillation between the cavity end mirrors occurs, and a high power output pulse is produced. The output pulse is terminated upon relaxation of the prisms or upon depletion of the population inversion, whichever occurs first. Alternatively, the prisms are separated sufficiently to allow total internal reflection, and application of a voltage pulse to the piezoelectric transducers brings the opposing faces of the prisms sufficiently close to produce high transmission of laser light through the two opposing faces.

3,711,792

SOLID STATE OSCILLATOR HAVING SEMICONDUCTOR ELEMENTS MOUNTED IN A CAVITY RESONATOR

Yoichi Kaneko, Kokubunji-shi; Yukinari Fujiwara, Kodaira-shi; Katuhiro Kimura, Tokyo, and Masao Kamimura, Kodaira-shi, all of Japan, assignors to Hitachi Ltd., Tokyo and Hitachi Electronics Company Limited, Kodaira-shi, Japan

Filed May 14, 1969, Ser. No. 824,614
Claims priority, application Japan, May 17, 1968, 43/32889; Aug. 5, 1968, 43/54916
Int. Cl. H03b *7/12*
U.S. Cl. 331—96 **8 Claims**



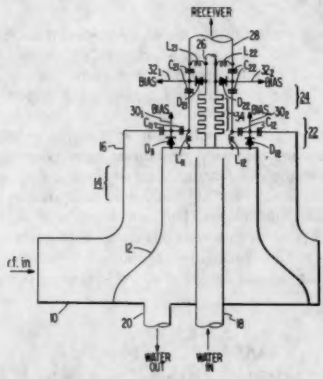
A solid state oscillator comprising a cavity resonator having an output portion, at least two semi-conductor elements disposed in an equi-phase plane of an electromagnetic field, and means for applying a bias voltage to each of said semiconductor elements.

3,711,793

HIGH POWER MICROWAVE SWITCH INCLUDING A PLURALITY OF DIODES AND CONDUCTIVE RODS

Vitaly Stachejko, Willingboro, N.J., assignor to RCA Corporation

Filed Dec. 24, 1970, Ser. No. 101,374
Int. Cl. H01p *1/10, 3/06*
U.S. Cl. 333—97 S **4 Claims**



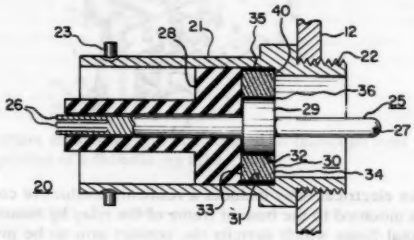
A high power, solid state, coaxial microwave switch wherein a plurality of diodes are mounted between the inner and outer conductors and a plurality of conductive rods are connected between the inner and outer conductors. The rods are selected such that the inductance of the rods and the capacitance of the diodes when reversed biased provide a resonant circuit at a predetermined frequency, whereby microwave energy incident upon the reversed biased diodes passes through the switch with little attenuation. When forward biased, the diodes provide a low impedance, whereby microwave energy incident thereon is substantially reflected.

3,711,794

SURGE SUPPRESSION TRANSMISSION MEANS

Dante M. Tasca, Philadelphia, Pa.; John D. Harnden, Jr., and Francois D. Martzloff, both of Schenectady, N.Y., assignors to General Electric Company

Filed Oct. 21, 1971, Ser. No. 191,216
Int. Cl. H01p 1/00, 1/22; H01c 7/12
U.S. Cl. 333—96 11 Claims



In a coaxial connector a generally toroidal shaped member of metal oxide varistor material is connected between the inner and outer conductors of the connector. The metal oxide varistor material has an alpha in excess of 10 in the current density range of from 10^{-3} to 10^{2} amperes per square centimeter. The spacing of the peripheral portions of the member is set so that a high impedance is presented to normal applied voltage between the peripheral portions. For voltages applied between the peripheral portions progressively in excess of the normal voltage rapidly decreasing impedance is presented by the toroidal member in accordance with the alpha of the material thereby limiting the variation in voltage between the peripheral portions of the toroidal shaped member.

ERRATUM

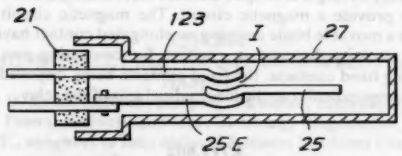
For Class 334—44 M see:
Patent No. 3,711,813

3,711,795

REED SWITCHES

Mario Martelli, Via Porta Rossa 6, Firenze, Italy

Filed Jan. 5, 1971, Ser. No. 104,100
Claims priority, application Italy, Jan. 9, 1970, 9309 A/70
Int. Cl. H01h 1/06, 1/66
U.S. Cl. 335—151 1 Claim



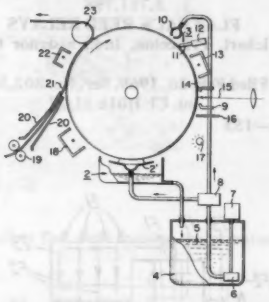
A reed switch includes two ferromagnetic strips supported in a sealed housing. At least one of the strips is supported from the housing by a resilient member. When a magnetic field links the strips the resilient member allows its associated strip to move towards the other strip until the two strips make electrical contact.

3,711,796

ELECTROPHOTOGRAPHIC COPYING MACHINE

Takashi Saito, Tokyo, and Yujiro Ando, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 28, 1971, Ser. No. 166,820
Claims priority, application Japan, July 29, 1970, 45/66295; March 30, 1970, 45/26736
Int. Cl. G03g 15/22, 15/10
U.S. Cl. 355—15 6 Claims



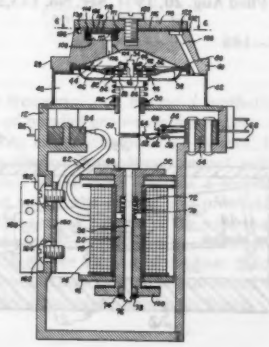
An electrophotographic copying machine of the type using a drum type photosensitive medium provided with a cleaning system. The cleaning system includes a blade of resilient material oriented in a counter-direction relative to the direction of movement of the photosensitive medium and having one edge disposed in contact with the medium, a cleaning tank, and circuitry for applying cleaning liquid to the areas of the medium and the blade near the contact area therebetween before the process is started.

3,711,797

TIMING DEVICE

Robert M. Flanagan, and Glenn W. Johnson, both of Summit, N.J., assignors to Amerace Esna Corporation, New York, N.Y.

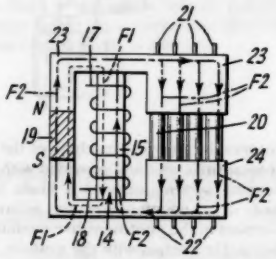
Division of Ser. No. 802,546, Feb. 26, 1969, Pat. No. 3,599,131. This application July 19, 1971, Ser. No. 164,062
Int. Cl. H01h 7/03
U.S. Cl. 335—61 4 Claims



A pneumatic timing device in which a timing head includes an air chamber, a diaphragm is movable relative to the timing head to effect a change in the volume of the air chamber and establish a flow of air into or out of the air chamber, a timing member is coupled for movement with the diaphragm at a rate determined by the rate of flow of air to or from the air chamber, a passage in the timing head communicates with the air chamber for conducting the flow of air, a body of porous material is in the passage for throttling the flow to a predeter-

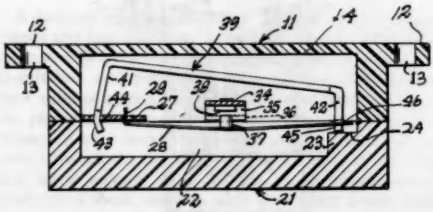
mined maximum rate of flow, the body of porous material having a surface of prescribed area through which the air flow passes, and a shutter is in close engagement with the surface of the body of porous material and includes a relatively nonporous member selectively movable along the surface relative to the body to close off at least portions of the area to the air flow for selectively varying the rate of the flow to regulate the rate of movement of the timing member.

3,711,798
FLAT PACK REED RELAYS
Walter J. Richert, Princeton, Ind., assignor to AMF Incorporated
Filed Feb. 26, 1969, Ser. No. 802,349
Int. Cl. H01h *51/22*
U.S. Cl. 335—153 **9 Claims**



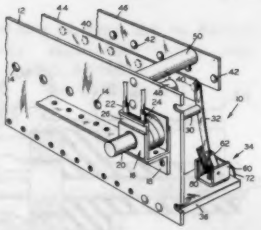
An electromagnetic reed relay of polarized and magnetic latching configurations adapted for low profile packaging, having at least one electromagnet, at least one permanent magnet the polarity of which is uneffected by the electromagnet and at least one reed switch magnetically coupled together by a pair of pole pieces.

3,711,799
ENCAPSULATED MAGNETIC PROXIMITY SWITCH
John W. Habecker, Waukegan, Ill., assignor to Cherry Electrical Products Corporation, Waukegan, Ill.
Filed Aug. 20, 1971, Ser. No. 173,567
Int. Cl. H01h *5/02*
U.S. Cl. 335—188 **1 Claim**



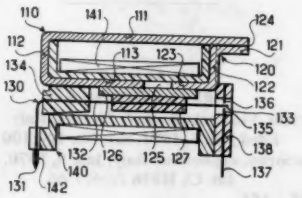
A magnetically actuated electrical switch, the movable parts of which are encapsulated within a molded housing, with such parts comprising a pair of terminal members, one of which provides a stationary contact head normally spaced from a movable switch blade carried by the other terminal member, with the latter terminal member providing a pivotal connection for one end of a magnetically attracted switch blade bridging member that has its opposite end connected to the free and movable end of the switch blade.

3,711,800
ELECTRICAL RELAY
Henry H. Clinton, Walnut Street, RFD No. 1, Ivoryton, Conn.
Filed July 22, 1971, Ser. No. 165,170
Int. Cl. H01h *3/00*
U.S. Cl. 335—192 **6 Claims**



An electrical relay includes a resilient, conductive contact arm mounted to the base or frame of the relay by means of a pivotal hinge which permits the contact arm to be pivoted between alternate contact positions against two electrically isolated contacts also mounted on the base. The contact arm is actuated between the two contacts by means of an electrical solenoid. A spring incorporated within the pivotal hinge urges the contact arm against one of the contacts and the electrical solenoid actuates the arm against the other of the contacts in opposition to the spring. The flexing characteristics of the contact arm produce slight wiping motions against each of the fixed contacts to insure that a low resistance junction is made between each of the contacts and the arm.

3,711,801
MINIATURE ELECTROMAGNETIC RELAY
Paul Bloch, Strassbourg-Meinau, France, assignor to La Telephonie Industrielle et Commercial Telic, Strassbourg-Meinau, France
Filed July 20, 1971, Ser. No. 164,272
Claims priority, application France, July 20, 1970, 7026677
Int. Cl. H01h *47/00*
U.S. Cl. 335—196 **13 Claims**

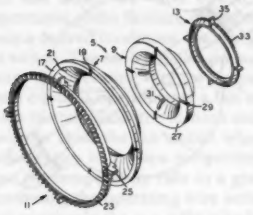


A relay having a C-shaped element surrounding a coil winding to provide a magnetic circuit. The magnetic circuit displaces a movable blade carrying an elongated contact having a free extremity disposed in position for contacting rest and working fixed contacts, the fixed contacts being disposed in a plane perpendicular to the longitudinal axis of the relay.

3,711,802
TOROID YOKE WITH MULTI-PART CORE
Charles Edward Torsch, Geneva, N.Y., assignor to GTE Sylvania Incorporated
Filed Sept. 8, 1971, Ser. No. 178,752
Int. Cl. H01f *7/00*
U.S. Cl. 335—210 **10 Claims**

A cathode ray tube deflection yoke includes horizontal and vertical deflection windings toroidally wrapped about a multi-

part core having a circular flared portion and a quasi-cylindrical portion affixed thereto and formed to telescope over the neck portion of a cathode ray tube.

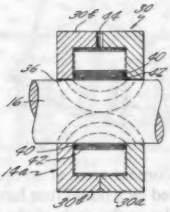


3,711,803

HIGH SPEED MAGNETIC FOCUS DEVICE

Roger F. West, Weston, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 10, 1971, Ser. No. 197,340
Int. Cl. H01f 7/00
U.S. Cl. 335—210 1 Claim



A focus coil for a cathode ray tube is capable of operating at high rates of change of flux with minimum losses and comprises a magnetically permeable, electrically non-conductive shell (exterior core) having an axial air gap substantially as long as the core, with a single helix of one turn per layer flat conductor, suitably insulated, as an electrical winding therein. Lack of eddy currents permits rapid changes in flux within the core, the large gap permits use of a small inductance and high current, and the high current is achieved by means of an extremely dense electrical winding formed of single-turn per layer flat conductor.

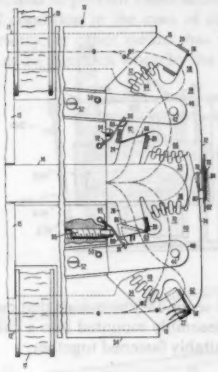
3,711,804

MAGNETICALLY RESTORABLE HIGH SPEED PRINT HAMMER

John D. Kroft, Endwell; Joseph P. Pawletko, Endwell; Francis E. Peters, Endwell, and Carl T. Young, Binghamton, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed April 15, 1971, Ser. No. 134,254
Int. Cl. H01f 7/08
U.S. Cl. 335—266 10 Claims

An electromagnetic print hammer comprises a magnetic core structure having a magnetic core with an armature movable between one flux path and another flux path. Means are provided for producing a magnetic flux in said core structure and control windings are energized to switch the flux from said one to said another flux path causing the armature to change position.

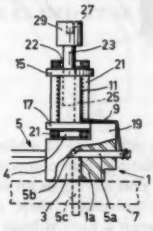


3,711,805

HIGH-FREQUENCY COIL HAVING A SYNTHETIC RESIN BASE

Alphonsus Jozephus Cornelus Heijnen, and Hendrikus Wilhelmus Antonius van Oorschot, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 11, 1971, Ser. No. 142,212
Claims priority, application Netherlands, May 28, 1970, 7007686
Int. Cl. H01f 15/02, 15/10
U.S. Cl. 336—65 9 Claims



A small high frequency coil having a synthetic resin base with a plurality of parallel grooves which extend to the lower surface of the base and to one side face thereof. Each groove contains a wire-shaped connecting contact with a portion thereof embedded in the base whereas a second portion is partly contained within the groove and protrudes from said one side face. The second portion of the wire-shaped contact is adapted to be bent at right angles to a position in which it protrudes from the lower surface of the base. The coil can be conveniently mounted on a printed circuit board with the coil axis either parallel or perpendicular to the board.

3,711,806

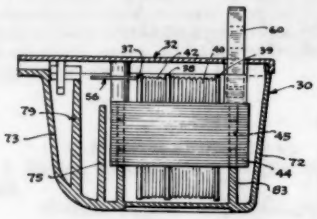
POWER PACK

Robert W. Flentge, Roselle, Ill., assignor to Dormeyer Industries, Inc., Chicago, Ill.

Filed Jan. 3, 1972, Ser. No. 215,023
Int. Cl. H01f 27/02
U.S. Cl. 336—92 14 Claims

A power pack unit for reducing line voltage and changing frequency including a transformer having a molded bobbin of insulating material and an enclosure casing where the bobbin

includes insulating flanges integrally formed to insulate the transformer core from the winding terminals and channels for

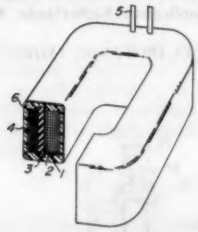


receiving primary and secondary terminals that can be located in place and as a subassembly mounted into a casing made of two parts which are suitably fastened together.

3,711,807
A MOLDED COIL

Kazuo Yamashita; Harutoki Nakamura, and Koichi Hirakawa, all of Toyonaka, Japan, assignors to Northern Industries & Mfg., Inc., Saint Paul, Minn.

Division of Ser. No. 778,715, Nov. 25, 1968, abandoned. This application July 12, 1970, Ser. No. 64,844
Int. Cl. H01f *27/32*
U.S. Cl. 336—205 **7 Claims**



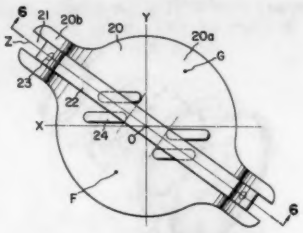
A mold transformer consisting of a blank coil impregnated with an electrical insulating resin composition of epoxy resin or the like, said blank coil having as an insulator a highly impregnable non-woven polyester fabric or non-woven glass fabric interposed between a high-voltage winding and a low-voltage winding, between the high voltage winding and a magnetic core and between the low-voltage winding and the magnetic core respectively, and a non-woven polyester fabric between adjacent winding layers of each of the high-voltage and low-voltage windings; and a method of producing said mold transformer.

3,711,808
SNAP OPERATING DEVICE

Akira Kamiyama; Koichi Kikuchi, and Kazuyuki Ishida, all of Kiryu, Japan, assignors to Mitsubadenkiseisak-Usho Co., Ltd., Gumma-Prefecture, Japan

Filed June 30, 1970, Ser. No. 158,242
Claims priority, application Japan, Oct. 28, 1970, 45/106412; Oct. 28, 1970, 45/94310
Int. Cl. H01h *61/00, 71/18*
U.S. Cl. 337—135 **4 Claims**

A snap operating vane of this invention constituting an automatic blinker particularly adapted to the control of automobile signals is characterized by a plurality of parallel bosses being aligned at predetermined positions and having the center lines forming a certain angle with the longitudinal axis of an electric heating belt, said electric heating belt being secured to the vane through slots in substantial extended ele-

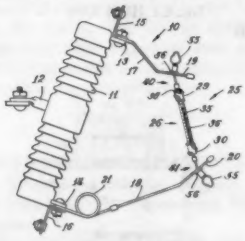


ments of said vane where the longitudinal axis of said slot and extended elements are coincidental with the axis of said belts.

3,711,809
OPEN TYPE FUSE

Charles H. Baker, Evanston, and Henry W. Scherer, Niles, both of Ill., assignors to S & C Electric Company, Chicago, Ill.

Filed Dec. 20, 1971, Ser. No. 209,876
Int. Cl. H01h *85/36*
U.S. Cl. 337—190 **6 Claims**

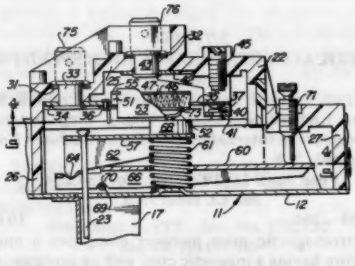


The biased apart contact arms of an open type fuse mounting are interconnected by a liquid fuse having clips detachably secured to the ferrules at the ends of the liquid fuse tube and detachably secured to contacts at the distal ends of the contact arms, the fuse assembly remaining in place under tension after blowing of the fuse.

3,711,810
TEMPERATURE RESPONSIVE CONTROL APPARATUS FOR FURNACES AND THE LIKE

Joseph H. Stafford, Columbus, and Robert E. Brooks, Worthington, both of Ohio, assignors to Ranco Incorporated, Columbus, Ohio

Filed July 31, 1969, Ser. No. 846,409
Int. Cl. H01h *37/46*
U.S. Cl. 337—388 **3 Claims**



Two snap switches are actuated individually by longitudinal movements of two wires anchored at one end to a common

leg, which has a greater coefficient of expansion than the wires, and attached at their other ends to switch operating levers spring biased to tension the wires.

One switch controls an electrically operated fuel valve for a hot air furnace and closes the valve circuit during normal operating temperatures of the furnace. When the furnace temperature exceeds a desired maximum, the wire is moved by the leg to open the switch. The switch is also opened by the spring force in the event the operating wire for the switch is broken. The other switch controls operation of a fan motor for circulating air through the bonnet of the furnace and is actuated by its operating wire to close the fan circuit when the temperature of the furnace rises to a given temperature and to open the circuit when the temperature falls to a given degree. The spring force tensioning the operating wire actuates the switch to closed circuit position in the event the wire breaks.

3,711,811

DEVICE FOR SIMULTANEOUSLY CONTROLLING ROTARY SHAFTS OF A PLURALITY OF VARIABLE RESISTORS

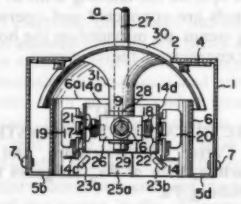
Shunzo Oka, and Hisao Kitahara, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Dec. 15, 1971, Ser. No. 208,091

Claims priority, application Japan, Dec. 17, 1970, 45/113849; Dec. 17, 1970, 45/127383; Dec. 17, 1970, 45/127384; Dec. 17, 1970, 45/127385

Int. Cl. H01c *9/02*

U.S. Cl. 338—128 **4 Claims**



A control device is provided which is capable of simultaneously controlling the rotary shafts of a plurality of variable resistors by one control shaft. The device is, for example, used in a stereophonic electric gramophone in which a plurality of volume controls must be simultaneously adjusted. A plurality of variable resistors are mounted coaxially on a pair of opposed walls of an outer frame which in turn is fixed in a casing, and an inner frame is rotatably carried in the outer frame by the rotary shafts of the variable resistors mounted on the outer frame. Another plurality of variable resistors are mounted on a pair of opposing walls of the inner frame at right angles to the walls of the outer frame mounting the one plurality of variable resistors, in such a manner that the axes of the other plurality of variable resistors are at right angles to those of the one plurality of variable resistors. One control shaft extending through the top of the casing is fixed to the rotary shafts of these variable resistors, whereby the variable resistors mounted on the outer and inner frame may be simultaneously or selectively adjusted by inclining the control shaft.

3,711,812

DRIVE AND CONTROL SYSTEM FOR DIAGNOSTIC AND THERAPEUTIC EXERCISE TREADMILL

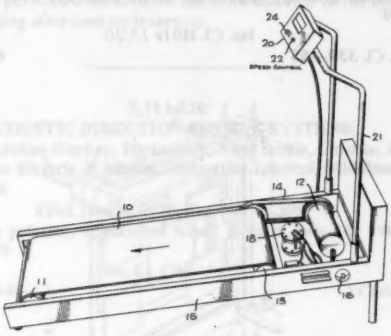
Raymond I. Cherry, Torrance, Calif., assignor to Del Mar Engineering Laboratories, Los Angeles, Calif.

Filed Nov. 29, 1971, Ser. No. 202,754

Int. Cl. A63b *23/06*

U.S. Cl. 338—200 **7 Claims**

An improved drive and control system for an exercise treadmill is provided which incorporates safety features for the prevention of a start-up at high belt speed after the treadmill has been turned off, or upon the resumption of power after a power failure, and to prevent rapid acceleration of the belt to a high speed condition in the case of certain control circuit failures. Circuitry, or other means, has been included in the drive system as an interlock whereby the manual on-off switch



which activates the drive motor will not be effective until the motor speed control has been reset to the zero speed position. In addition, circuitry is included to provide for shutting down the drive motor in the event of a failure or malfunction in its control circuitry which could cause an unscheduled rapid increase in the treadmill belt speed to a high speed condition.

3,711,813

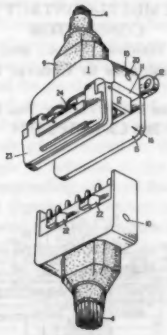
PLUG AND SOCKET CONNECTOR FOR ELECTRIC CIRCUITS

Stanley Bryant, New South Wales, Australia, assignor to Bryant Manufacturing Pty. Limited, New South Wales, Australia

Filed May 4, 1971, Ser. No. 140,046

Int. Cl. H01r *13/44, 13/54*

U.S. Cl. 339—44 M **5 Claims**



A plug and socket connector for electric circuits, the connector being particularly adapted for use on motor vehicles, for connecting selected circuits of the motor vehicle into a trailing vehicle such as a caravan being towed by the motor vehicle. The plug and socket of the connector each comprise a housing having interchangeable contact support members releasably secured therein with contact pins and contact sockets in one each of the support members.

The construction and arrangement of the components of the connector provides a simple and economical construction in which the principle components of the connector are moulded from a dielectric material and can be readily wired and assembled and in which when coupled, the plug and socket are protected from damage by road stones and grit.

3,711,814

PRINTING CIRCUIT MOUNTING STRUCTURE

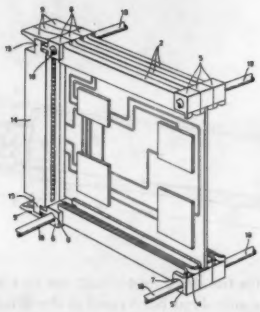
Piero Pomella, Ivrea, and Mario Alberico, Romano Canavese, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Torino, Italy

Filed June 16, 1970, Ser. No. 46,784

Claims priority, application Italy, June 21, 1969, 52332 A/69

Int. Cl. H01r *13/20*

U.S. Cl. 339—65 6 Claims



A mounting structure for a printed circuit board and an associated electrical edge connector. A pair of mutually opposed guides receives the circuit board and a pair of seats on said guides receives the associated electrical edge connector. Each end of the electrical edge connector is secured in the seat by a locking means consisting of an elastic projection of the guide having a shoulder for engaging the electrical edge connector. Each circuit board is of compressible plastic material having a width in excess of the nominal dimension so that when a plurality of guides are assembled side-by-side into a pack, the pack can be sidewardly compressed, resulting in the guides assuming the nominal dimension.

3,711,815

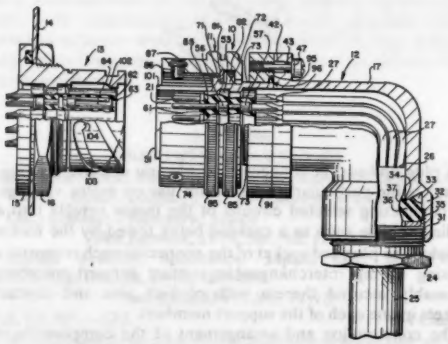
TIGHT ANGLE MULTI-CONTACT ELECTRICAL CONNECTOR

Edward J. Pierce, Melrose, Mass., and Daniel R. Doucet, Newton, Mass., assignors to General Connector, Newton, Mass.

Filed June 24, 1971, Ser. No. 156,306

Int. Cl. H01r *13/54*

U.S. Cl. 339—90 R 4 Claims



A multi-contact right angle connector is adapted to permit cable entry at any one of a large plurality of discrete angular orientations with highly reliable hermetic seals to maintain a stable dry environment in the critical internal region.

3,711,816

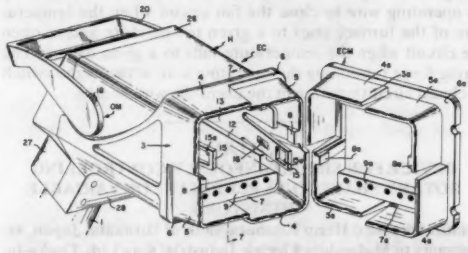
MEANS HAVING OPERATING MEANS FOR CONNECTING MULTICONDUCTOR CABLE MEANS

William Ludlow Schumacher, Camp Hill, Pa., assignor to AMP Inc.

Division of Ser. No. 807,198, March 14, 1969. This application May 20, 1971, Ser. No. 145,141

Int. Cl. H01r *13/54, 13/62*

U.S. Cl. 339—91 R 1 Claim



An electrical connector comprises a housing member housing electrical terminals disposed in dielectric blocks. Latching arms are movably mounted in guide slots along opposing sides of the housing member. Cam means are provided in the slots and on the latching arms to cause latching sections of the latching arms to be moved into and out of latching engagement with a complementary housing member when eccentric operating means operate the latching arms so that the mating electrical terminals are connected and operate the latching arms. Polarizing means are provided on the housing members to assure proper engagement therebetween.

3,711,817

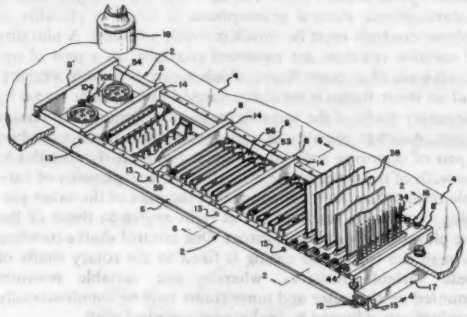
ELECTRICAL JUNCTION SYSTEM

Clyde Thomas Carter, Mechanicsburg, and Homer Ernst Henschen, Carlisle, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 24, 1969, Ser. No. 879,451

Int. Cl. H01r *13/62*

U.S. Cl. 339—121 17 Claims



Electrical junction system comprises a frame on which are mounted a plurality of electrical connectors and a panelboard. The panelboard has a multiplicity of contact terminal pins extending therethrough, one end of each pin being engaged with a contact terminal in one of the connectors. The other ends of the pins are interconnected to form interconnections among the conductors extending to the connectors. First and second guide and locating means on the frame accurately locate the connectors and the panelboard with respect to the frame so that the individual contact terminals in the connectors and in the panelboard are accurately located with respect to each other thereby to permit removal of, and assembly to, the

panelboard to the frame while the connectors are mounted in the frame. Additionally, the dual locating means permits removal of the connectors from the frame, and assembly of the connectors to the frame, while the panelboard is mounted on the frame.

3,711,818

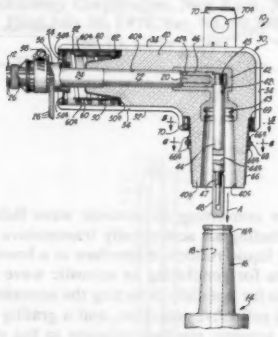
ELECTRICAL DISCONNECT

Raymond J. Swehla, 860 Hawthorne Circle, Lombard, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.

Filed Nov. 9, 1970, Ser. No. 87,791

Int. Cl. H01r *13/52, 13/58*

U.S. Cl. 339—60 C **8 Claims**



A high-voltage, electrical disconnect including an axially elongated terminal adapted to make and break contact with a fixed contact upon axial movement relative thereto. An annular elastomeric insulating filler is provided around said terminal and is formed with an open-ended recess in coaxial alignment with said terminal for receiving an insulating member around said fixed contact. Radial compression means is provided around said insulating filler for establishing void-free, interfacial contact between said insulating member and the surface of the recess in the elastomeric insulating filler when said terminal and the fixed contact are connected together.

3,711,819

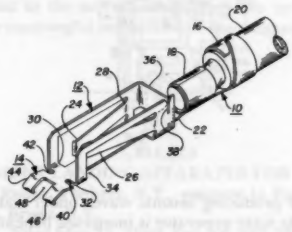
SQUARE PIN RECEPTACLES EMPLOYING CHANNEL CONTACTS

Russell H. Matthews, South Pasadena, Calif., assignor to Elco Corporation, Willow Grove, Pa.

Filed Feb. 8, 1972, Ser. No. 224,549

Int. Cl. H01r *13/12, 23/02*

U.S. Cl. 339—192 R **10 Claims**



A family of electrical connectors for mating with a plurality of closely spaced, parallel square pins comprises an insulating housing and a plurality of female contacts mounted in said housing. Each contact is folded from sheet metal into a channel having a general U cross-section, when viewed from the direction of mating, has twin spring fingers struck from the respective sides of said channel for engaging opposite sides of a square pin when same is inserted into said contact, and has a folded back plate for reinforcement and limiting depth of contact entry. Generally, each contact is retained in its insulator by either (a) notches thereon which snap over respective bosses in the insulator cavity during contact insertion, or (b) extension portions which overlie the front and rear of the insulator housing after contact insertion.

3,711,820

ACOUSTIC DIRECTION SENSING SYSTEMS

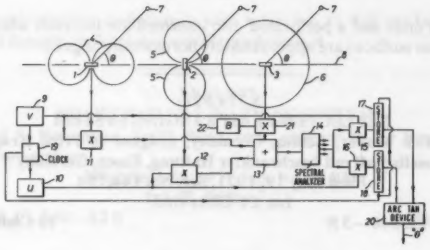
Bertrand Julian Starkey, Dartmouth, Nova Scotia, Canada, assignor to Electric & Musical Industries Limited, Middlesex, England

Filed June 4, 1970, Ser. No. 43,395

Claims priority, application Great Britain, July 16, 1969, 35,715/69

Int. Cl. G01s *3/00*

U.S. Cl. 340—2 **3 Claims**



An acoustic detection system is disclosed. A rotating cardioidal shaped directive pattern of a transducing arrangement is produced by generating a first local signal, the value of which corresponds to the sine of the angle of rotation of the directive pattern, generating a second local signal whose value corresponds to the cosine of the angle of rotation of the directive pattern, and forming a cardioid function from signals produced by the transducing arrangement, in response to an acoustic source, and the first and second local signals. A spectral analyzer is provided for producing analysis signals proportional to the square of the amplitude of a frequency component of the cardioid function and means are provided for deriving product signals proportional to the analysis signals derived at a given angle of rotation of the directive pattern, multiplied by the corresponding value of the first local signals. A plurality of product signals are derived during at least one revolution of the cardioid directive pattern so as to produce a sum signal indicative of the direction of the acoustic source.

3,711,821

SONOBUOY SUSPENSION SYSTEM

John R. Dale, Willow Grove, Pa.; Roger A. Holler, Easton, Pa., and Garnet Goss, Haverford, Pa., assignors to the United States of America as represented by the Secretary of the Navy

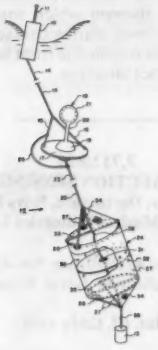
Filed Nov. 23, 1970, Ser. No. 92,057

Int. Cl. B63b *21/52*

U.S. Cl. 340—2 **17 Claims**

A sonobuoy having a hydrophone deployable in water at a predetermined depth below a drifting surface float by a suspension system which includes a pair of compliant cables connected by a subsurface assembly and terminates near the hydrophone with a drogue unit. The subsurface assembly is slightly negative in buoyancy and includes a disc whose planar

surfaces are approximately horizontally aligned in the water. The drogue unit includes a perforated flexible sleeve open at



both ends and a perforated disc intermediate the ends whose planar surfaces are approximately horizontally aligned.

3,711,822

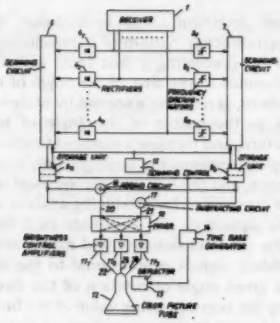
REFLECTED-BEAM RANGING SYSTEM

Dietrich Muller, Achim, Germany, assignor to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed May 19, 1971, Ser. No. 144,784

Int. Cl. G01s *9/66*

U.S. Cl. 340—3 R **10 Claims**



A reflected-beam ranging system in which echo signals are displayed cartographically on the screen of a color picture tube having at least two color components. A circuit means, including frequency selective filter means and rectifying means, for providing a pair of output signals whose amplitudes contain the Doppler information is connected to each output of the echo receiver, which preferably has a plurality of outputs one for each sector of the ranging field. The pair of output signals are mixed in a mixing means whose outputs are applied to the respective color control amplifiers of the color picture tube so as to display the echo signals in different colors depending on the Doppler content of the signals. The circuit means may, for example, comprise a frequency discriminator and a rectifier for providing the pair of output signals from the output signal of the receiver, or a high-pass filter and a low-pass filter whose outputs are separately rectified to provide the pair of output signals.

3,711,823

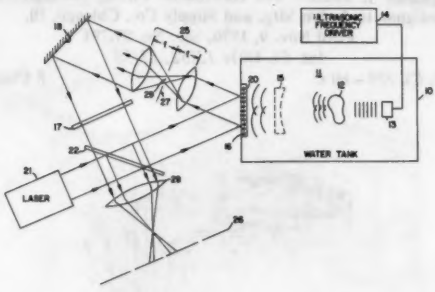
ACOUSTIC TO OPTICAL IMAGE CONVERTER USING AN ACOUSTIC GRATING

Philip S. Green, Redwood City, Calif., assignor to American Express Investment Company, San Francisco, Calif.

Filed July 27, 1970, Ser. No. 58,442

Int. Cl. H01s *3/02*

U.S. Cl. 340—5 I **24 Claims**



A system for converting an acoustic wave field to a light wave field including an acoustically transmissive medium, a solid elastic or liquid reflective interface at a boundary of the medium, means for generating an acoustic wave field in the medium, means for optically detecting the acoustic wave field incident at the reflective interface, and a grating or grid immersed in the acoustic medium adjacent to but spaced from the reflective interface. The grating is formed of a material having an acoustic impedance different from the medium thereby to superimpose the acoustic wave field on a spatial frequency carrier.

3,711,824

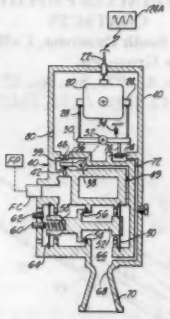
METHOD OF PRODUCING UNDERWATER SEISMIC WAVES AND APPARATUS THEREFOR

John R. Farron, Mishawaka, Ind.; Andrew A. Seleno, Royal Oak, Mich.; Matthew Slavin, Pasadena, Calif., and Bernard R. Teitelbaum, Birmingham, Mich., assignors to United Geophysical Corporation, Pasadena, Calif.

Filed Jan. 15, 1971, Ser. No. 106,772

Int. Cl. H04b *13/00*; G01v *1/02*

U.S. Cl. 340—7 R **24 Claims**



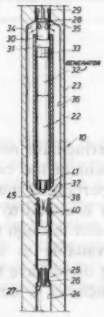
A method of producing seismic waves under water is provided. A seismic wave generator is immersed beneath the surface of the water. A continuously varying predetermined command signal is generated for a period of time to operate a motor. The motor, operated in accordance with the command signal, controls the flow of pressurized fluid from the seismic wave generator into the surrounding water. A continuously varying pressure wave is thereby generated in the surrounding water. Changes in pressure in the surrounding water are de-

tected and a feedback signal is generated in accordance with the changes in pressure. The feedback signal is combined with the command signal to produce a control signal which operates the motor to generate the desired pressure wave in the surrounding water.

3,711,825
DATA-SIGNALING APPARATUS FOR WELL DRILLING TOOLS

Jackson R. Claycomb, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed July 30, 1970, Ser. No. 59,395
Int. Cl. G01v 1/14
U.S. Cl. 340—18 LD **12 Claims**



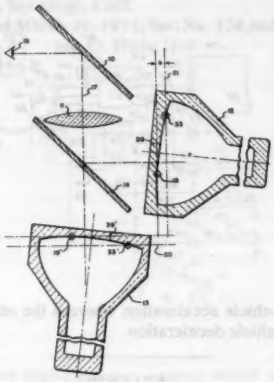
In the preferred embodiments of the invention disclosed herein, a well tool having new and improved data-signaling apparatus and carrying a drill bit on its lower end is dependently coupled from a drill string and lowered into a borehole being excavated. During the drilling operation, measurements are successively made of selected borehole conditions, formation properties, or the like, which are converted by the data-signaling apparatus into coded electrical signal for repetitively initiating the operation of a valve of unique design operatively arranged on the tool to be selectively actuated by the drilling fluid interrupting the flow of the drilling fluid being circulated through the drill string. In this manner, the valve functions to produce a series of encoded pressure pulses in the drilling fluid which are representative of the measurements being obtained. These pressure pulses are transmitted through the drilling fluid to the surface where they are sensed and converted into meaningful indications of the measurements.

3,711,826
INSTRUMENT LANDING APPARATUS FOR AIRCRAFT

Joseph La Russa, Yonkers, N.Y., assignor to Farrand Optical Co., Inc., Bronx, N.Y.

Filed May 23, 1969, Ser. No. 827,359
Int. Cl. G08g 5/02; G03b 21/26
U.S. Cl. 340—27 NA **2 Claims**

There is disclosed apparatus for instrument landing of aircraft presenting to the pilot, from glide path and range signals originating on the ground and from aircraft-originated signals on altitude, airspeed and aircraft attitude, a three-dimensional representation of a roadway in the sky down which the aircraft is to be navigated to a touchdown point on an airport runway, together with indications of the departure of the aircraft from

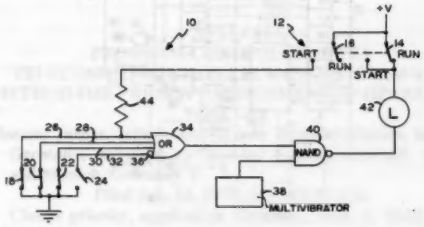


proper position and altitude with reference to that roadway, and departures from desired airspeed along it.

3,711,827
BRAKE FAILURE WARNING SYSTEM

Paul S. Houseman, South Bend, Ind., assignor to the Bendix Corporation

Filed Sept. 30, 1970, Ser. No. 76,932
Int. Cl. B60t 17/22
U.S. Cl. 340—52 B **3 Claims**



A brake failure warning light that monitors a number of functions. If one of the functions is out of tolerance, the light will be energized. By inclusion of an oscillating signal and control logic, the light will flash. Also, a bimetal switch could be used to periodically interrupt energy being delivered to the light. A self test is incorporated to determine if the warning light is operating properly. The functions being monitored by the warning light are the brake master cylinder fluid levels, the electronic control unit for an adaptive braking system and the braking pressure differential in a split system.

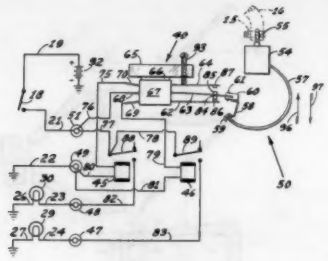
3,711,828
VEHICLE ACCELERATION AND DECELERATION INDICATOR

Robert L. Hawkins, 490 South Rochester Avenue, Indianapolis, Ind.

Filed Nov. 6, 1970, Ser. No. 87,467
Int. Cl. B60q 1/50
U.S. Cl. 340—66 **3 Claims**

A device for indicating acceleration and deceleration of a vehicle. A Bourdon tube connected to the engine intake manifold of the vehicle has a free end movable as a result of vacuum developed within the manifold. An electrical switch operable by the free end is connected to a pair of relays. The tube, switch and relays are mounted within a box having ter-

minal outlets connected to a source of electrical energy and to a pair of light bulbs mounted to the vehicle. One bulb energizes upon vehicle acceleration whereas the other bulb energizes upon vehicle deceleration

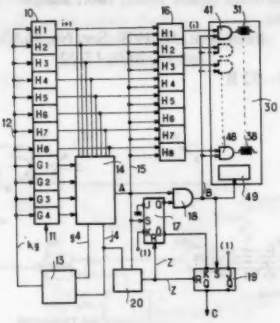


3,711,829

RECEIVER FOR DATA TRANSMISSION

Claude Lubrano, Yerres, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Oct. 13, 1971, Ser. No. 188,976
Claims priority, application France, Oct. 13, 1970, 7037001
Int. Cl. G06f *11/10*
U.S. Cl. 34—146.1 AX **8 Claims**



A device which improves the process of identification of the characters of erroneous data resulting from disturbances in the transmission which includes the evaluation of two successive characters and the determination that both characters are accurate before the first of the two characters will be transferred to the output device.

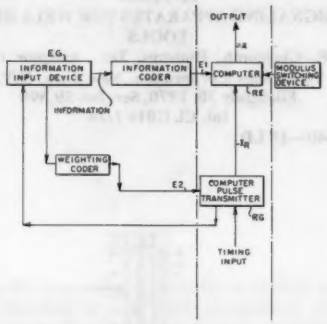
3,711,830

METHOD AND DEVICE FOR CALCULATING CHECK DIGITS AND FOR CONTROLLING GROUPS OF DIGITS WITH APPENDED CHECK DIGITS FOR ERRORS

Cornelius Gerrit Van Der Sel, Gutersloh, Germany, assignor to Anker-Werke AG, Bielefeld, Germany

Filed Sept. 14, 1970, Ser. No. 71,946
Claims priority, application Germany, Sept. 12, 1969, P 19 46 227.2
Int. Cl. G06f *11/10*
U.S. Cl. 340—146.1 AJ **7 Claims**

Method of calculating check digits and of controlling digit groups having appended check digits for errors, includes sequentially recalling stored digits to a pulse transmitter and transmitting the digits through a first coder and through a first input to a computer and simultaneously forming for each transmitted digit a multiplication factor dependent on the position of the digit in the respective digit group and transmitting the multiplication factor to a backward counter of the pulse transmitter. A computer pulse number corresponding to the value of the multiplication factor and indicating how many times the respective digit is to run through the computer, is produced, and the backwards counter is reset to the value of the multiplication factor. Pulses are transmitted from the pulse transmitter to the computer and the backwards counter is set back by one unit for each transmitted pulse. A further step is adding to the computer, for each run of the respective digit therethrough, a remainder value calculated with the modulus from an intermediate memory storage so that the remainder value present in the computer after a digit corresponding to the appertaining multiplication factor has run through the computer is added to a subsequent digit during the initial run of the latter through the computer, whereby the checking result is available in the intermediate memory storage after all of the digits have run through the computer. The invention also includes a device for carrying out the foregoing method.

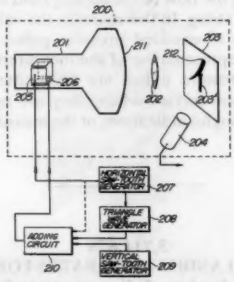


3,711,831

PATTERN SCANNING SYSTEM

Toyohisa Kaneko, Tokyo; Nobuhiko Sezaki, Yokohama, and Hiroshi Katagiri, Kawasak, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 690,608, Dec. 14, 1967, abandoned.
This application Feb. 2, 1971, Ser. No. 112,050
Claims priority, application Japan, Dec. 21, 1966, 41/84983
Int. Cl. H01j *29/70*; G06k *9/00*
U.S. Cl. 340—146.3 F **4 Claims**



A pattern search means used for a pattern recognition system, wherein a pattern such as a written character is searched by an electronic beam spot which scans the field along a line having at least two parts of different inclination such as a sinusoidal waveform, semi-circle or bent straight line, instead of a single straight line as used in the conventional system.

3,711,832

CODE NUMBER DETECTING DEVICE

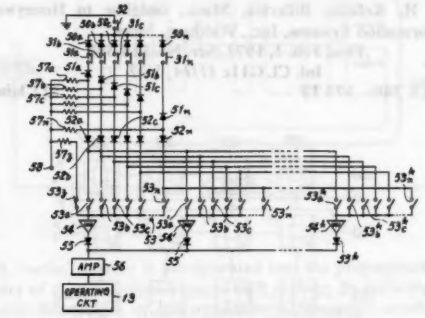
Shunro Yamawaki, Tokyo, and Isao Ohyama, Yokohama, both of Japan, assignors to Tokico Ltd., Kawasaki, Kanagawa-ken, Japan

Filed Oct. 14, 1970, Ser. No. 80,629

Claims priority, application Japan, Oct. 17, 1969, 44/83045; Oct. 24, 1969, 44/84658; Oct. 25, 1969, 44/85516

Int. Cl. H01h 9/30; H04q 1/20

U.S. Cl. 340—149 R 6 Claims



A code number detecting device is provided which reads and detects a code number of a code member. When the detected code number is in accord with a preset code number, the device actuates an operating circuit. The action of the operating circuit causes a fuel suction pump to become inoperative. In the device is a code number reading means which includes a safety power source circuit by which a voltage supply circuit is substantially opened when a load circuit is short-circuited.

3,711,833

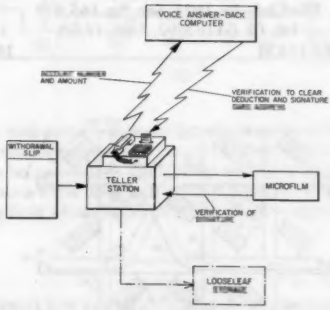
METHOD OF VERIFYING SIGNATURES AND FORMS CARRIER FOR USE THEREON

Charles E. Starkey, 6641 W. 71st Street, P. O. Box 68076, Indianapolis, Ind.

Filed June 7, 1971, Ser. No. 150,632

Int. Cl. G11b 5/00; G06k 15/00

U.S. Cl. 340—149 A 2 Claims



A method of verifying the identity of an individual by means of a uniquely cataloged signature card which may also contain the individual's photograph. A novel forms carrier to align signature cards is used for xeroxing or microfilming. The carrier has slots to hold individual cards and pockets for use in coding and cataloging. Once copies of cards are made they may be used as part of a verification system, their address being determined from a computer in which the address is stored under the bank patron's account number.

3,711,834

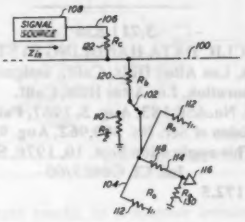
MATRIX SWITCH HAVING ISOLATION RESISTORS

Stanley Rogers, La Jolla, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed March 29, 1971, Ser. No. 129,068

Int. Cl. H04q 1/18

U.S. Cl. 340—166 R 4 Claims



A broad-band high-frequency matrix switch arrangement with isolation means to limit voltage variations is disclosed. A resistance means is used in the matrix switch output line immediately preceding an output amplifier to isolate the high input impedance of the amplifier from the system and to reduce high-frequency rolloff. In addition, to reduce standing waves and the resulting voltage variations along the input bus, a second resistance means is provided to isolate the matrix switch input bus from the signal source and a third resistance means is provided to isolate the input bus from the crosspoint switch. These various isolating resistance means cooperate to improve switch performance while preventing certain undesirable effects which occur when any of the several resistance means is used alone.

3,711,835

PROGRAM-CONTROLLED DATA TELECOMMUNICATION EXCHANGE SYSTEM AND METHOD FOR PRIORITY ASSIGNMENT OF OPERATING CYCLES

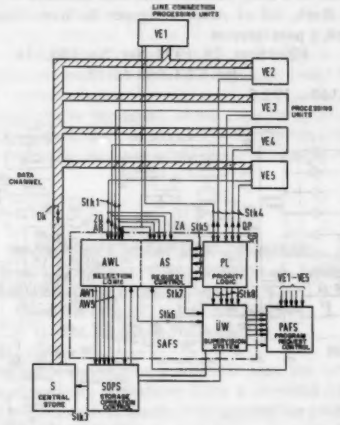
Hannes Jaeger, Icking, and Walter Veprek, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 24, 1970, Ser. No. 57,926

Claims priority, application Germany, Sept. 2, 1969, P 19 44 483.8

Int. Cl. G06f 3/00

U.S. Cl. 340—172.5 11 Claims



A program controlled data dial exchange system and method for operating such a system in which data processing

units connected to a central store preliminarily request a storage cycle assignment, and assignment takes place upon transmission of a second signal. A selection logic assigns cycles according to a normal permanently assigned priority or according to special selectable priorities. Traffic supervision means locate defects such as failure to operate in various parts of the system, and in conjunction with the selection logic the priorities of the cycle assignments are adjusted accordingly.

3,711,836

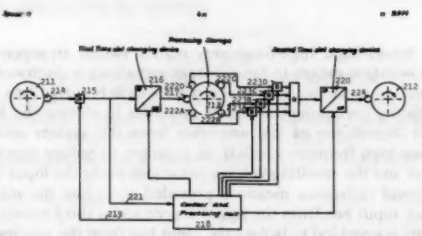
CYCLIC DATA HANDLING SYSTEMS

Gerhard Dirks, Los Altos Hills, Calif., assignor to Dirks Electronics Corporation, Los Altos Hills, Calif.

Division of Ser. No. 658,183, Aug. 3, 1967, Pat. No. 3,548,381, which is a division of Ser. No. 300,962, Aug. 9, 1963, Pat. No. 3,343,133. This application Sept. 10, 1970, Ser. No. 71,182

Int. Cl. G06f *3/00*

U.S. Cl. 340—172.5 **11 Claims**



Information units are stored in a first sequence in a first cyclic storage unit and are transferred to a processing storage operating in synchronism with said first cyclic storage (i.e., at either the same or an integral multiple rate) under control of a control and processing unit. A key field associated with each information unit is fed to the control and processing unit which then controls transfer from the processing storage to second cyclic storage in such a manner that the information units are arranged in a predetermined sequence in accordance with the key fields of the units. The second cyclic storage unit operates at the same rate as the first cyclic storage unit. Merging may be accomplished by similar transfer from a first and second storage unit to a third and fourth cyclic storage unit.

3,711,837

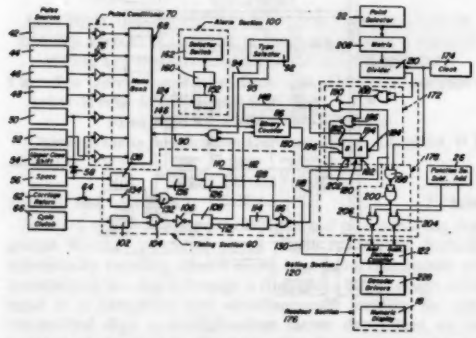
HEADLINE COUNTING AND PRINTING DESIGN DEVICE

Leland E. Smith, Pine Bluff; Jack B. Johnson, Little Rock; Kenneth N. Burks, Jacksonville, and Kenneth D. Copeland, Little Rock, all of Ark., assignors to Kara-Kount Incorporated, a part interest

Filed Sept. 28, 1971, Ser. No. 184,531

Int. Cl. G06k *15/18*

U.S. Cl. 340—172.5 **21 Claims**



Actuation of character keys on a typewriter produce coded pulses that are converted into binary numbers by a programmable memory, representing variations of basic linear widths in accordance with selected printing type styles. The binary number output of the memory controls a pair of counters through a gating section to display a numeric readout representing the accumulated linear width of type of selected height corresponding to the character keys actuated.

3,711,838

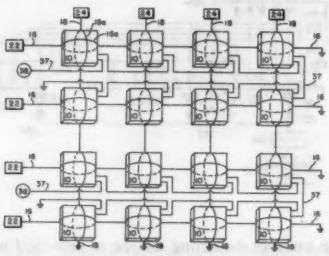
MAGNETIC DEVICE FOR DOMAIN WALL PROPAGATION

John H. Kefalas, Billerica, Mass., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Feb. 1, 1971, Ser. No. 111,338

Int. Cl. G11c *11/14, 5/02*

U.S. Cl. 340—174 TF **12 Claims**



Magnetic planar modules have cylindrical domains magnetized normal to the planar surfaces of the modules and are propagated by the introduction of a rotating field transverse the domains in the selected ones of the modules. The magnetic surface of the modules may be of a cobalt-phosphorus alloy which supports cylindrical domains and allows for an economical and large scale production of an array of magnetic modules. The domains are guided throughout their respective modules to predetermined locations where their presence or absence is detected.

3,711,839

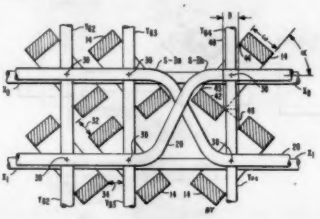
HIGH DENSITY CORE MEMORY MATRIX

Victor L. Sell, Santa Monica, and Syed M. S. Alvi, Placentia, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed July 26, 1971, Ser. No. 165,477

Int. Cl. G11c *5/02, 5/06, 11/06*

U.S. Cl. 340—174 M **18 Claims**



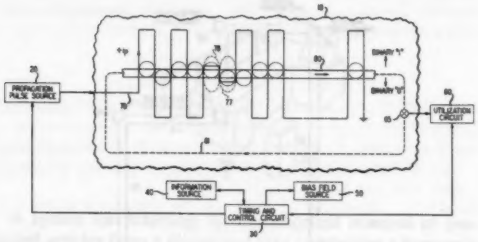
A high density core memory matrix has cores spaced very close together along longitudinal axes and moderately close along latitudinal axes. The close longitudinal spacing is facilitated by orienting the cores at the maximum acute angle with respect to the longitudinal axis consistent with proper passage of the latitudinal drive lines. Undesirable electrical characteristics and propagation-time delays are minimized by passing the sense and inhibit lines along the extremely compacted longitudinal axis.

3,711,840

WRITE CIRCUIT USING ENHANCED PROPAGATION PULSES FOR LATERAL DISPLACEMENT CODING OF PATTERNS OF SINGLE-WALL MAGNETIC DOMAINS

John Alexander Copeland, III, Gillette, N.J., assignor to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed Dec. 13, 1971, Ser. No. 207,252
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF 10 Claims



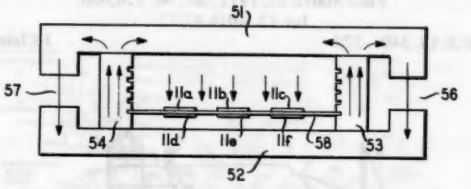
A "write" feature is incorporated into the propagation circuitry of a lateral displacement shift register by reducing the lateral dimensions of the serpentine propagation conductor pattern at predetermined "write" positions along the propagation channel. Enhancement of amplitude of a selected propagation pulse creates a lateral force sufficient to displace a domain at such a position to a side of the channel determined by the polarity of the enhanced pulse.

3,711,841

MAGNETIC SINGLE WALL DOMAIN ARRANGEMENT

Joseph Edward Geusic, Berkeley Heights, and Le Grand Gerard Van Uitert, Morris Twp., Morris County, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 22, 1971, Ser. No.
Int. Cl. G11c *11/14, 5/04*
U.S. Cl. 340—174 TF 9 Claims



Single wall domain material for which permissible bias field ranges exist for only narrow ranges of temperatures have been found to be particularly useful over relatively large ranges of temperature when used with a biasing magnet which provides a biasing field which varies properly as a function of temperature.

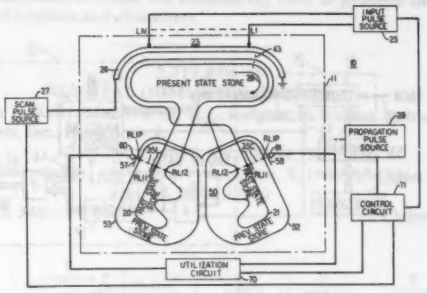
3,711,842

SINGLE WALL MAGNETIC DOMAIN LOGIC ARRANGEMENT

Woo Foung Chow, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Inc., Murray Hill, Berkeley Heights, N.J.

Filed Dec. 30, 1971, Ser. No. 214,192
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF 9 Claims

A pair of closed loop domain propagation channels each of which exhibits a domain in only one of two laterally displaced positions in each stage is adapted herein to provide a simple autonomous line scanned by separating associated portions of the two channels into two independent but synchronously operated paths or tracks. Related logic operations are carried out in the separate tracks, in a manner consistent with the requisite complementary domain format in an input portion of the channels where the tracks are not physically separated.

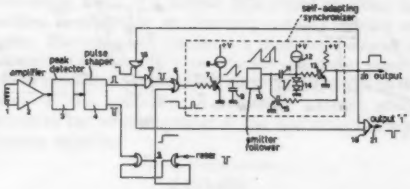


3,711,843

SELF-ADAPTING SYNCHRONIZATION SYSTEM FOR READING INFORMATION FROM A MOVING SUPPORT

Alighiero Galvagni, Ivrea; Mirco Raccanelli, Viverone, and Vittorio Eccettuato, Cornaredo, all of Italy, assignors to Ing. C. Olivetti & C., S. p. A., Ivrea, Torino, Italy

Filed April 27, 1971, Ser. No. 137,795
Claims priority, application Italy, April 27, 1970, 68429 A/70; April 16, 1971, 68265 A/71
Int. Cl. G11b *5/04*
U.S. Cl. 340—174.1 H 5 Claims



A self-adapting synchronization system is disclosed which synchronizes the reading of information from a moving support having data information interspersed with control information recorded thereon. The system includes a timing unit, which can be embodied either through an analog circuitry or through digital elements, and which is arranged under the control of the control information read from the support to adapt itself to variations in the speed of the support by generating timing signals the duration of which is proportional to the time interval between the two preceding items of control information.

3,711,844

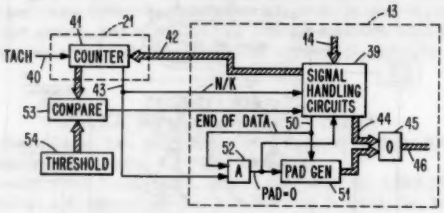
UPDATABLE MAGNETIC RECORDS

John W. Irwin, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1971, Ser. No. 208,600
Int. Cl. G11b *5/44, 19/06*
U.S. Cl. 340—174.1 B 10 Claims

Digital magnetic records on a magnetic tape are formed independent of velocity deviations from a nominal or design velocity. A given length of media is designated for each record to be recorded. Such length is established to more than accommodate signals to be recorded by a predetermined maximum velocity of transport. Upon completing recording a

given block of signals, a padding area is established until a given length of media has been relatively displaced with



respect to a transducer regardless of the velocity during recording

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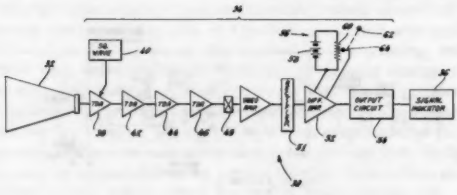
3,711,845

PROCESS AND APPARATUS FOR FIRE FIGHTING BY DETECTING AND LOCATING HIDDEN BURNING MATERIAL AND HOT EMBERS BEHIND WALLS, PARTITIONS AND THE LIKE

Norman E. Chasek, Stamford, Conn., assignor to International Microwave Corporation, Cos Cob, Conn.

Filed Dec. 9, 1969, Ser. No. 883,030
Int. Cl. G08b *17/00, 17/06*
U.S. Cl. 340—227 **6 Claims**



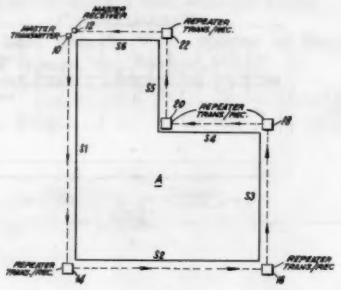
A process and apparatus for fire fighting by detecting and locating hidden burning material, such as hot embers, hot coals, hot spots and the like behind intervening optically opaque cooler obstructions such as walls, partitions, smoke, etc. by sensing the direction and relative strength of short radio waves which are generated and radiated by such hot spots. The range of radio waves which can be employed extends from approximately 1,000 megaHertz up to 40,000 megaHertz, the optimum range being from 4,000 megaHertz to 14,000 megaHertz and my presently preferred frequency of operation is approximately 8,000 to 9,000 megaHertz because this frequency (1) is sufficiently low to provide penetration of intervening opaque objects without undue attenuation; (2) is sufficiently high to provide good directivity with portable hand-held apparatus as described; and (3) is sufficiently high to avoid much of the man-made radio interference which exists today. A portable detector and locator for hidden hot spots includes a directional antenna adapted to be aimed and moved about manually and a hand-held sensitive radio receiver coupled to the antenna with an associated indicator device which gives an appropriate signal to the user indicating that a fire or hidden hot spot has been detected and located. The signal may be audible or visual and it changes in character, for example, it gets louder or more powerful or higher in pitch as the temperature of the hidden hot spot increases and also as the user approaches it so that it subtends a greater effective angle within the beamwidth of the antenna.

3,711,846

SEGMENT LOCATING INTRUSION ALARM SYSTEM

Gabor Schlisser, Tenafly, and Julius R. Insler, Bergenfield, both of N.J., assignors to Holobeam, Inc., Paramus, N.J.

Filed Feb. 8, 1971, Ser. No. 113,324
Int. Cl. G08b *13/00*
U.S. Cl. 340—258 B **16 Claims**



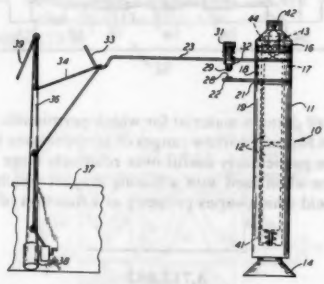
An intrusion alarm protection system for use in an area enclosed by a multi-segmented perimeter. An intrusion into the area actuates an alarm and the segment in which the intrusion occurs is uniquely identified. In the embodiment of the invention herein disclosed, a beam is directed around the protected area by repeaters located at the termination of each perimeter segment. When any repeater does not receive an input pulse, due to the interruption in the beam to that repeater as a result of an intrusion, the latter produces a unique or characteristic signal. That signal is received to actuate the alarm, and decoded at a master receiver to provide the desired, unambiguous indication of the individual segment in which the intrusion occurred.

3,711,847

ELECTRIC SIGNAL FOR FISHING

Guy G. Barrows, 3305 Spring Street, Racine, Wis.

Filed March 25, 1971, Ser. No. 128,008
Int. Cl. A01k *97/12*
U.S. Cl. 340—279 **1 Claim**

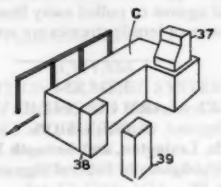


An electrical signal for fishing and including a battery case, batteries, and an electric bulb. Two electric contact members are supported on the case, and one of the members is of a cantilever structure extending laterally of the case and having a hook on the extending end for draping the fish line over the hook. When a fish pulls on the line, the line in turn pulls on the hook and the cantilever type electric contact member to close contact points and energize the light bulb to signal the fisherman.

3,711,848
METHOD OF AND APPARATUS FOR THE DETECTION OF STOLEN ARTICLES

Henry J. Martens, Lynnfield, Mass., assignor to I. D. Engineering, Inc., Lynn, Mass.

Filed Feb. 10, 1971, Ser. No. 114,306
Int. Cl. G08b 21/00
U.S. Cl. 340—280 4 Claims



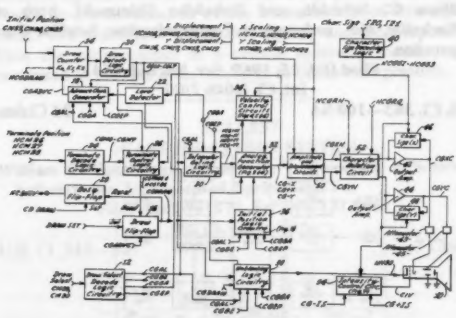
A system for detecting the unauthorized removal of protected articles from a designated area comprising a harmonic generator circuit made up of a semiconductor diode chip and a pair of antennas adapted to receive a radio frequency signal at a first frequency and transmit a second radio frequency signal at a second, relatively higher frequency. Transmitting and receiving means are positioned adjacent an exit area for actuating the circuit and an alarm when protected articles approach the area, and means are provided for deactivating the circuit when the protected article is legitimately purchased.

The generator circuit can be manufactured at very low cost thereby permitting, when a legitimate sale is made, permanent deactivation of the circuit without removing or otherwise handling the tag or label carrying the circuit.

3,711,849
CHARACTER FONT GENERATING SYSTEM FOR CATHODE-RAY TUBE DISPLAYS, OR THE LIKE

Ralph D. Hasenbalg, Canoga Park, Calif., assignor to Vector General, Inc., Canoga Park, Calif.

Filed March 8, 1971, Ser. No. 122,057
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 8 Claims

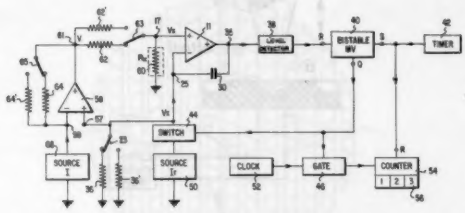


A character generating system is provided which responds to multi-bit digital commands derived, for example, from a read-only memory, for generating analog signals suitable for controlling the beam of a cathode-ray tube so as to cause characters and symbols to be formed on the viewing screen of the cathode-ray tube. The system to be described is capable, for example, of producing four distinct figures, and these figures are combined to define the selected characters and symbols on the cathode-ray tube screen. The production of part or all of any one of the four distinct figures will be defined herein as a "draw", and any standard alpha-numeric character and other symbols may be implemented in three draws or less. The individual figures are produced in the system by analog function generators, and the function generators and appropriate blanking circuitry are controlled in accordance with the commands to cause the cathode-ray tube to produce the desired symbols and characters.

3,711,850
DIGITAL OHMMETER CIRCUIT

Austin T. Kelly, Morristown, N.J., assignor to Weston Instruments, Inc., Newark, N.J.

Filed Dec. 3, 1970, Ser. No. 94,739
Claims priority, application France, Dec. 5, 1969, 6942066
Int. Cl. H03k 13/20
U.S. Cl. 340—347 NT 2 Claims

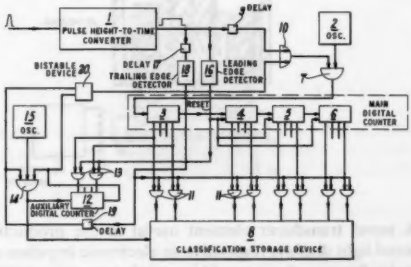


A digital ohmmeter includes a current source having very high effective internal resistance to develop an analog signal across an unknown resistor and an analog-to-digital converter connected to the unknown resistor. The current source includes a differential operational amplifier with a conventional source of current connected to its integrating amplifier and to the inverting input and negative feedback from the output to the non-inverting input. The output current is connected through a known resistance to the unknown resistor and to the non-inverting input of a second differential amplifier having capacitive feedback to its inverting output, forming an integrator. The integrator produces a dual-slope output under the control of a timer and level detector which also gates clock pulses to a counter to produce a count proportional to the resistance of the unknown. A reference current source is switched to the inverting input of the non-inverting input of the source amplifier.

3,711,851
METHOD FOR CORRECTING SYSTEMATIC ERRORS IN DIFFERENTIAL LINEARITY OF A PULSE HEIGHT-TO-TIME CONVERTER AND CONVERTER FOR THE APPLICATION OF SAID METHOD

Pierre Giraud, Paris, and Michel Redon, Villennes-sur-Seine, both of France, assignors to Intertechnique S. A., Plaisir, France

Filed Dec. 10, 1969, Ser. No. 883,883
Claims priority, application France, Dec. 12, 1968, 68177836
Int. Cl. H03k 13/02
U.S. Cl. 340—347 CC 14 Claims



A digital counter records the pulses delivered by an oscillator during a time interval which is substantially proportional to

the amplitude of each signal to be converted. Prior to each conversion, the counter is set in any initial state and the result of the conversion is modified in order to take said initial state into account.

3,711,852

CONTACTFREE DATA INPUT DEVICE

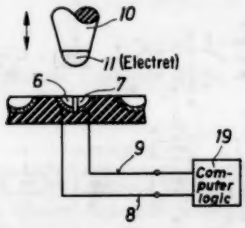
Fritz Firnig, Weidengrund, Germany, assignor to Olumpia Werke AG, Wilhelshaven, Germany

Filed April 23, 1971, Ser. No. 136,907

Claims priority, application Germany, May 21, 1970, P 20 24 679.1

Int. Cl. H04q *3/00*

U.S. Cl. 340—365 C **1 Claim**



A contactfree data input device for an electronic calculator which is not limited by the finger size of the operator. The input device includes an input stylus having an element on the end thereof which will initiate an electrical input signal when it is brought into close proximity to a cooperating input circuit means located at a value input location in the input field. According to one embodiment an electret is provided on the stylus and the input circuit means comprises a pair of spaced electrodes. According to a further embodiment, the stylus is provided with a permanent magnet and the input circuit means comprises a ferrite core which is continuously being switched between its magnetization states and which has a separate readout winding.

3,711,853

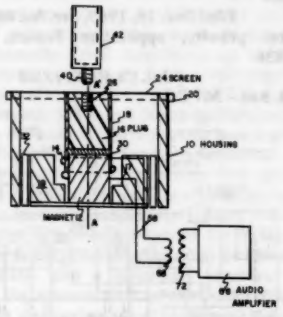
SYSTEMS FOR PRODUCTION OF COLORED LIGHTS FROM AUDIO IMPULSES AND TRANSDUCER THEREFOR

Lawrence A. Sklar, 14697 N.E. 18th Avenue, North Miami, Fla.

Filed Nov. 10, 1971, Ser. No. 197,344

Int. Cl. G08b *5/22*

U.S. Cl. 340—366 B **11 Claims**



A novel transducer element useful in the production of colored light displays responsive to electronic impulses and as a device for reproducing audible sounds responsive to the output of an audio amplifier which comprises the following combination. A housing having an open upper end covered by a taut fine-mesh screen which forms a container for the assembly described below. A plug of rigid plastic foam is attached to and depends downwardly from the taut screen. A tube and coil wound on the tube is rigidly attached to a lower part of the plug. The tube is movably mounted around the upper part of a magnet situated in the lower part of the housing. When the coil is interconnected to an audio amplifier, vertical oscillatory motion is imparted to the plug-tube-coil assembly. The vertical movement is restricted by the taut screen means which also prevents the assembly from being immovably forced against or pulled away from the magnet when either compressive or tensile stresses are applied to the plug.

3,711,854

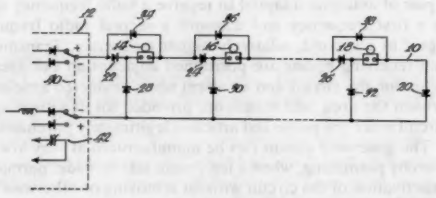
PARALLEL ALARM CIRCUIT HAVING SERIES SUPERVISION

Joe D. Reynolds, Lexington, and Kenneth V. Cannon, Galion, both of Ohio, assignors to Federal Sign and Signal Corporation, Chicago, Ill.

Filed Oct. 19, 1971, Ser. No. 190,568

Int. Cl. G08b *21/00*

U.S. Cl. 340—409 **6 Claims**



An alarm circuit having a plurality of audible sounding devices is arranged in series relative to a supervisory current in one direction of flow to enable supervision of the coils of the devices. The circuit is arranged in parallel in the other direction of flow via polarized devices to enable sounding of the devices in parallel.

3,711,855

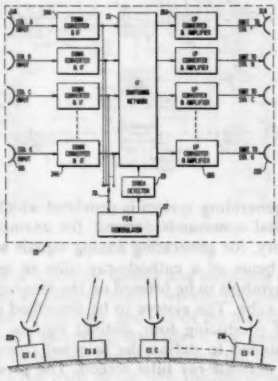
SATELLITE ON-BOARD SWITCHING UTILIZING SPACE-DIVISION AND SPOT BEAM ANTENNAS

William G. Schmidt, and Nobuhiko Shimasaki, both of Rockville, Md., assignors to Communications Satellite Corporation

Filed Oct. 15, 1969, Ser. No. 866,554

Int. Cl. H04b *7/00*

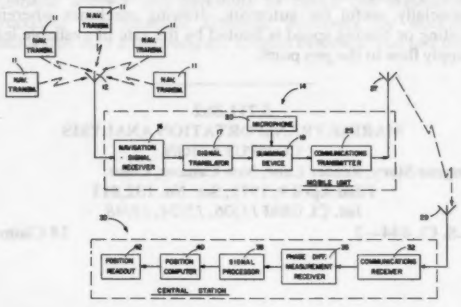
U.S. Cl. 343—100 SA **24 Claims**



An on-board processing system is disclosed for a communications satellite which employs spot beam antennas. Since

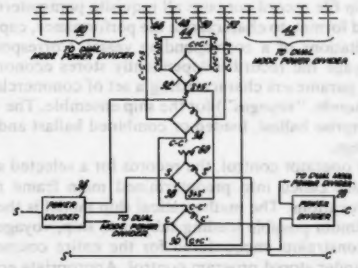
each spot beam antenna in general, sees only one ground station, this allows the same frequencies to be used by all stations. Using this space-division technique, the on-board processing involves the switching from origin grouping of incoming communications signals to destination grouping of outgoing communications transmissions. This switching is accomplished by means of a distribution frame. The distribution frame includes storage registers which logically control the partitioning of the voice-channel segments and the switching times. The contents of all of the storage registers can be changed by command.

3,711,856
POSITION LOCATING SYSTEM
Donald J. Adrian, Corona, and Lawrence E. Christensen, Riverside, both of Calif., assignors to Astrophysics Research Corporation, Los Angeles, Calif.
Filed Aug. 17, 1970, Ser. No. 64,304
Int. Cl. G01s *1/24*
U.S. Cl. 343—103 **10 Claims**



Signals transmitted from radio navigation transmitters of the type such as utilized in the Decca, Omega, and Loran navigation systems, are received in mobile locations such as on a vehicle or ambulatory personnel. These signals are translated from their original frequency to frequencies within the audio band pass of voice communication equipment, the original phase relationship being retained in the translation. The translated signals are combined with the normal communication signals of the communications equipment and thus included in the modulation of the transmissions of this equipment. The translated navigation signals are then separated from the audio output at a central receiving location and processed to provide information as to the mobile position.

3,711,857
CAPTURE EFFECT SYSTEM
William C. Cummings, Annandale, Va., assignor to Scanwell Laboratories, Incorporated, Springfield, Va.
Filed April 7, 1971, Ser. No. 131,946
Int. Cl. G01s *1/16*
U.S. Cl. 343—107 **7 Claims**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POWER DIVIDER
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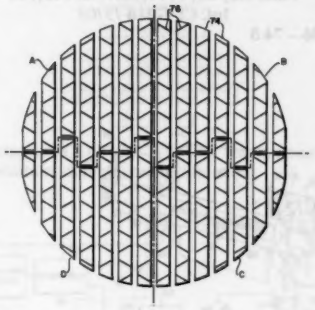
TO DUAL MODE POWER DIVIDER

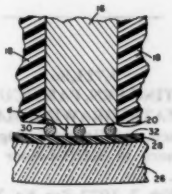
A capture effect antenna system in which the course and clearance signals are transmitted from a single antenna array. The clearance carrier signal has a substantial null along the course centerline, to thereby cause significant reduction in the course bends.

3,711,858
MONOPULSE RADAR ANTENNA STRUCTURE
George C. Reeder, Jr., Pasadena, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 24, 1971, Ser. No. 118,363
Int. Cl. H01q *13/10*
U.S. Cl. 343—771 **4 Claims**



An antenna structure formed from slotted wave guide sections for producing monopulse arrays and incorporating means for reducing sidelobes. This is achieved by providing wave guide sections in the four quadrants of a monopulse antenna with adjacent ends of the wave guides in the quadrants being staggered such that certain wave guides in one quadrant extend into an adjacent quadrant and vice versa. The staggered configuration effectively reduces the slope of the transition in phase from one quadrant to the other and results in a reduction in amplitude of the side-lobes.

3,711,859
ELECTROGRAPHIC RECORD SYSTEM HAVING A SELF SPACING MEDIUM
Arling Dix Brown, Cleveland Heights, and John Blumenthal, Wickliffe, both of Ohio, assignors to Gould Inc., Chicago, Ill.
Division of Ser. No. 694,654, Dec. 29, 1967, Pat. No. 3,657,005. This application May 14, 1970, Ser. No. 37,209
Int. Cl. G01d *15/06*; G03g *5/00*
U.S. Cl. 346—74 ES **3 Claims**



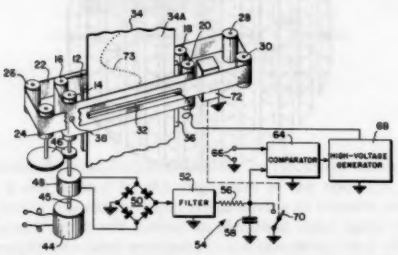
There is provided an electrostatic recording system with voltage charging apparatus having charging electrodes and an

electrographic record medium having spacer means, a portion of which projects above the outer surface of a dielectric layer of the record medium. The spacer means space the outer surface of the dielectric layer a fixed critical distance from the charging electrodes during the voltage charging operation.

3,711,860
ARC DISCHARGE RECORDING APPARATUS WITH PIGMENT CARRIER

Lewis A. Medlar, Oreland, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 25, 1971, Ser. No. 146,746
Int. Cl. G01d *15/08*
U.S. Cl. 346—74 S **9 Claims**



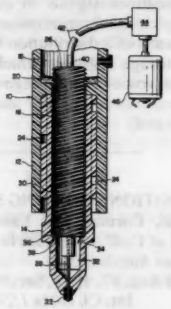
A high speed recording system has a belt of dielectric material with an aperture therein and a drive means for the belt to move the aperture across a recording surface of a recording medium along a recording line. A pigment carrier is positioned between the belt and a first electrically conductive surface with the pigment carrier and the recording surface being coextensive with the recording line. A second electrically conductive surface for supporting the recording medium is positioned on the other side of the recording medium from the dielectric belt and is, also, arranged to extend along the path of the moving aperture. A selectively operable high voltage generating means is connected between the first and second electrically conductive surfaces to induce an electrical discharge therebetween through the pigment carrier, the moving aperture and the recording surface. This electrical discharge transfers some of the pigment from the carrier to the recording surface to produce a visible permanent recording. The recording medium can be driven to produce two axes of relative motion between the recording surface and the moving aperture whereby the aperture path encompasses the recording surface by a succession of parallel recording lines.

3,711,861
TUBE WRITING PEN, PARTICULARLY FOR AUTOMATIC DRAWING MACHINES

Ewald Lorenz, Uelzen, and Holger Soring, Quickborn, both of Germany, assignors to KOH-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Filed Feb. 2, 1972, Ser. No. 222,873
Claims priority, application Germany, Feb. 4, 1971, P 21 05 131.0
Int. Cl. G01d *15/16*
U.S. Cl. 346—140 **7 Claims**

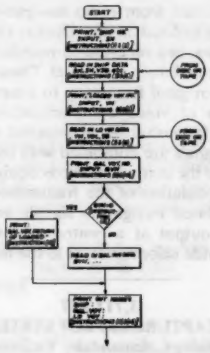
A stylographic or tube writing pen including an internal bore and an axially movable drop weight therein mounting a clearing wire, the external surface of the drop weight having a helical recess extending at least partially into an ink reservoir, and the drop weight being rotatable to facilitate feeding of ink from the reservoir to the writing point of the pen. The pen is especially useful for automatic drawing machines wherein writing or tracing speed is limited by the rate of available ink supply flow to the pen point.



3,711,862
MARINE TRANSPORTATION ANALYSIS COMPUTATION

Eugene Story, Reeder Lane, New Canaan, Conn.

Filed April 9, 1971, Ser. No. 132,811
Int. Cl. G06f *15/06, 15/24, 15/48*
U.S. Cl. 444—1 **18 Claims**



Digital computing apparatus employs peripheral memory equipment for storing plural record ship and voyage files. Each ship file record contains all requisite parameters, stored in a fixed format, to characterize the performance, capabilities and limitations of a corresponding vessel. Correspondingly, each voyage file record independently stores economic and physical parameters characterizing a set of commercial cargo trades (herein: "voyages") for the ship ensemble. The voyages may comprise ballast, loaded or combined ballast and loaded voyage legs.

Under operator control, the records for a selected ship and voyage are called into predetermined main frame memory storage locations. The mathematical ship model is then given the maximum possible loading subject to ship, voyage and/or hybrid constraints encountered for the entire course of the voyage under stored program control. Appropriate economic performance data is generated, and normalized to facilitate performance comparison.

In accordance with one aspect of my invention, a matrix data presentation is generated for computer testing of a set of ships on each of a set of voyages, as for comparison and scheduling purposes.

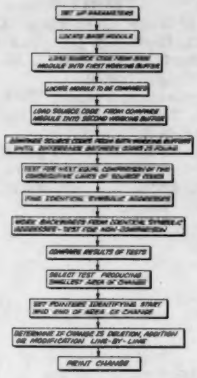
3,711,863

SOURCE CODE COMPARATOR COMPUTER PROGRAM

Delwin W. Bloom, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 21, 1972, Ser. No. 219,721
Int. Cl. G06f 9/16
U.S. Cl. 444—1 11 Claims

A procedure for controlling a data processing system by a computer program that compares two versions of a source program and identifies the difference between the two. The program compares the two versions until a noncomparison is determined. The program then continues to compare each line in the base version to each line in the modified version until a comparison is found. The program then verifies that it is in the same area of both files by checking for an identical symbolic address and proceeds to check the statements preceding the identical symbolic addresses by working backwards until a noncompare is again detected. The test that defines the smallest area of noncomparison delineates the changes. The program then examines the statements in the


SET UP PARAMETERS
LOCATE BASE MODULE
LOAD SOURCE CODE FROM BASE MODULE INTO FIRST WORKING BUFFER
LOCATE MODULE TO BE COMPARED
LOAD SOURCE CODE FROM COMPARE MODULE INTO SECOND WORKING BUFFER
COMPARE SOURCE CODES FROM BOTH WORKING BUFFERS UNTIL DIFFERENCE BETWEEN CODES IS FOUND
TEST FOR NEXT EQUAL COMPARISON OF TWO CONSECUTIVE LINES OF SOURCE CODES
FIND IDENTICAL SYMBOLIC ADDRESSES
READ BACKWARDS FROM IDENTICAL SYMBOLIC ADDRESSES - TEST FOR NON-COMPARISON
COMPARE RESULTS OF TESTS
SELECT TEST PRODUCING SMALLEST AREA OF CHANGE
SET POINTERS IDENTIFYING START AND END OF AREA OF CHANGE
DETERMINE IF CHANGE IS DELETION, ADDITION OR MODIFICATION LINE-BY-LINE
PRINT CHANGES

noncomparing area to signify whether the noncomparison is due to an addition, deletion or modification.

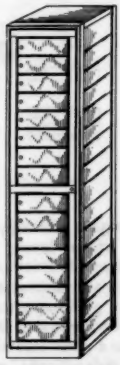
JANUARY 16, 1973

225,919
COMBINED BUN AND FRANKFURTER
Theodore A. Corn, 1000 N. Point, San Francisco, Calif. 94109, and Robert M. Harlick, 2330 Wexford, South San Francisco, Calif. 94080
Original design application Apr. 14, 1969, Ser. No. 16,743, now Patent No. 223,223. Divided and this application Dec. 3, 1970, Ser. No. 23,145
Term of patent 14 years
The portion of the term of the patent subsequent to Apr. 4, 1986, has been disclaimed
Int. Cl. D1—*04*
U.S. Cl. D1—26

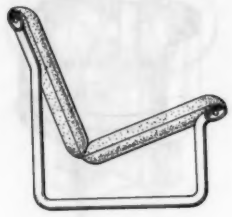
225,920
SHIRT
Kathy Compton, Alexandria, Va. (14000 Castle Blvd., Apt. 103, Green Castle Country Club Apts., Silver Spring, Md. 20904)
Filed Aug. 4, 1971, Ser. No. 169,155
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—46

225,921
NECKWEAR ACCESSORY
Moses T. Williams, 2000 Valmont St., New Orleans, La. 70115
Filed July 20, 1970, Ser. No. 24,035
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—243

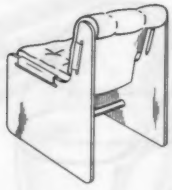
225,922
HORIZONTALLY DIVIDED LOCKER
Marvin D. Rosenberg, Glencoe, Ill., assignor to Convenience Locker Corp., Chicago, Ill.
Filed Nov. 6, 1970, Ser. No. 25,856
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—168



225,923
SEAT
Andrew Ivar Morrison, Brooklyn, and Bruce R. Hannah, Staten Island, N.Y., assignors to Knoll International, Inc., New York, N.Y.
Filed May 18, 1970, Ser. No. 23,026
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—66

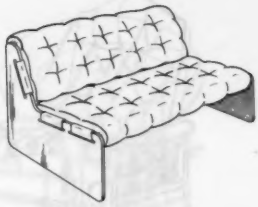


225,924
CHAIR OR THE LIKE
Stuart John Gilbert and Karen T. Gilbert, Constantine, Mich., assignors to Harter Corporation, Sturgis, Mich.
Filed June 4, 1970, Ser. No. 23,303
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—75

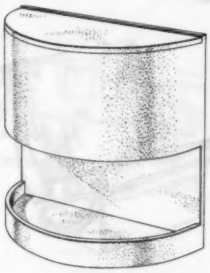


225,925
CHAIR
Gordon L. Duern and Donald S. Griffin, Kitchener, Ontario, Canada, assignors to Electrohome Limited, Kitchener, Ontario, Canada
Filed Apr. 7, 1971, Ser. No. 132,247
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—69

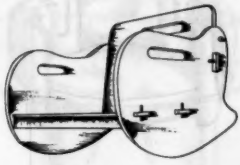
225,926
SEAT
Stuart John Gilbert and Karen T. Gilbert, Constantine, Mich., assignors to Harter Corporation, Sturgis, Mich.
Filed June 4, 1970, Ser. No. 23,315
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—61



225,927
CONSOLE TABLE
Gordon L. Duern and Donald S. Griffin, Kitchener, Ontario, Canada, assignors to Electrohome Limited, Kitchener, Ontario, Canada
Filed Mar. 26, 1971, Ser. No. 128,643
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—79

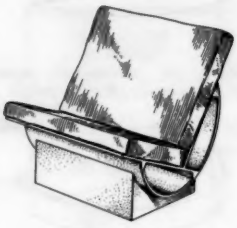


225,928
ROCKING CHAIR
Earl E. Lockwood, 35 Crosby St., East Hartford, Conn. 06118
Filed Jan. 15, 1971, Ser. No. 106,941
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—49

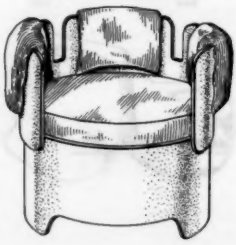


225,929
CHAIR
Don Ray Gill, Hammond, Ind., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed Apr. 22, 1971, Ser. No. 136,635
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—68

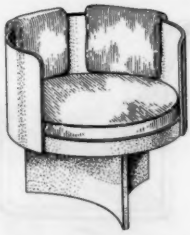
225,930
CHAIR
Gordon L. Duern and Donald S. Griffin, Kitchener, Ontario, Canada, assignors to Electrohome Limited, Kitchener, Ontario, Canada
Filed Mar. 26, 1971, Ser. No. 128,641
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—69



225,931
CHAIR
Gordon L. Duern and Donald S. Griffin, Kitchener, Ontario, Canada, assignors to Electrohome Limited, Kitchener, Ontario, Canada
Filed Mar. 23, 1971, Ser. No. 127,434
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—69



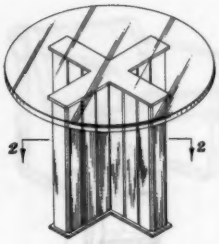
225,932
CHAIR
Gordon L. Duern, 100 Queen St. N., Apt. 605, and Donald S. Griffin, 191 Filsinger Road, both of Kitchener, Ontario, Canada
Filed Apr. 23, 1971, Ser. No. 137,105
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—69



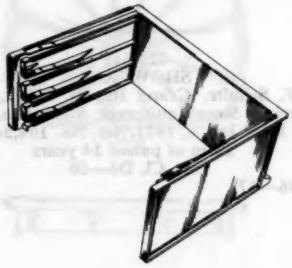
225,933
CHAIR
Gordon L. Duern and Donald S. Griffin, Kitchener, Ontario, Canada, assignors to Electrohome Limited, Kitchener, Ontario, Canada
Filed Mar. 23, 1971, Ser. No. 127,444
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—69

225,934
STAND FOR A HAIRDRYER
Jurgen Greubel, Eschenhahn, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed Jan. 22, 1971, Ser. No. 109,095
Claims priority, application Germany Sept. 2, 1970
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—85

225,935
TABLE
Joseph E. Kienel, P.O. Box K, Acworth, Ga. 30101
Filed Apr. 26, 1971, Ser. No. 137,749
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146

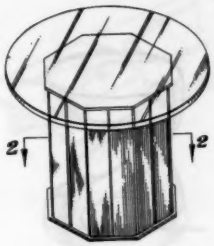


225,936
DRAWER SUPPORT OR SIMILAR ARTICLE
Robert L. Propst, Ann Arbor, and James O. Kelley, Saline, Mich., assignors to Herman Miller, Inc., Zeeland, Mich.
Filed Oct. 26, 1970, Ser. No. 25,677
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—191

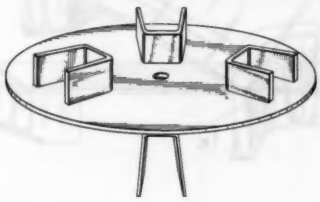


225,937
HOLDER FOR A HAIRDRYER
Jurgen Greubel, Eschenhahn, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed Jan. 22, 1971, Ser. No. 109,081
Claims priority, application Germany Sept. 2, 1970
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130

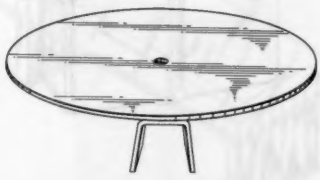
225,938
TABLE
Joseph E. Kienel, P.O. Box K, Acworth, Ga. 30101
Filed Apr. 26, 1971, Ser. No. 137,748
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146



225,939
MULTIPLE UNIT CARREL
Frank R. Torrey, 9805 Dallas Ave., Silver Spring, Md. 20901
Filed Feb. 19, 1971, Ser. No. 117,191
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146



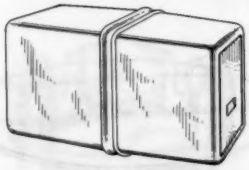
225,940
TABLE
Frank R. Torrey, 9805 Dallas Ave., Silver Spring, Md. 20901
Filed Feb. 19, 1971, Ser. No. 117,190
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146



225,941
COFFEE TABLE
Gordon L. Duern and Donald S. Griffin, Kitchener, Ontario, Canada, assignors to Electrohome Limited, Kitchener, Ontario, Canada
Filed Mar. 22, 1971, Ser. No. 127,077
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146

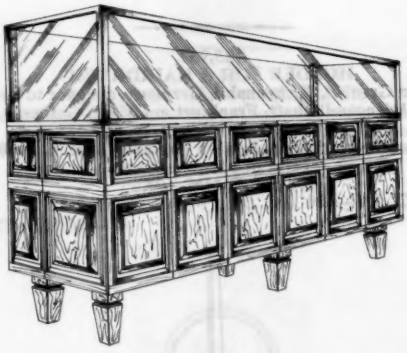
225,942
COMBINED CABINET AND TABLE UNIT
Douglas C. Anderson, 1337 W. Edgemont, Phoenix, Ariz. 85007
Filed Mar. 8, 1971, Ser. No. 122,255
Term of patent 3½ years
Int. Cl. D6—*03*
U.S. Cl. D6—157

225,943
STORAGE CABINET OR SIMILAR ARTICLE
Andreas Christen, Zurich, Switzerland, assignor to Knoll International, Inc., New York, N.Y.
Filed July 1, 1970, Ser. No. 23,795
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—158

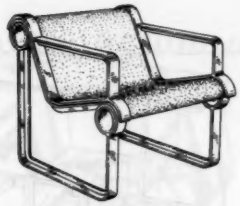


225,944
VANITY CABINET
Arnold H. Klein, Clarksville, N.Y., assignor to Klein Industries, Inc., Cobleskill, N.Y.
Filed Feb. 10, 1971, Ser. No. 114,256
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—167

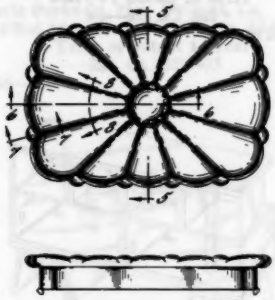
225,945
SHOWCASE
Donald W. Schulte, Grand Rapids, Mich., assignor to American Store Equipment, Muskegon, Mich.
Filed Jan. 6, 1971, Ser. No. 104,545
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—172



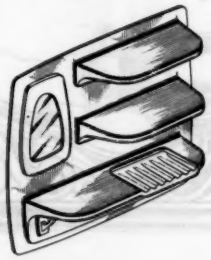
225,946
CHAIR
Andrew Ivar Morrison, Brooklyn, and Bruce R. Hannah, Staten Island, N.Y., assignors to Knoll International, Inc., New York, N.Y.
Filed May 18, 1970, Ser. No. 23,025
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—66



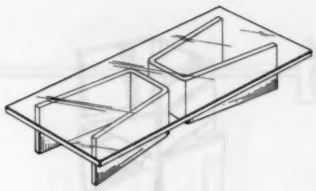
225,947
SOAP DISH
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed June 1, 1971, Ser. No. 149,117
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—89



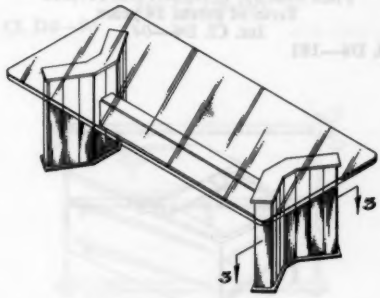
225,948
COMBINED MIRROR AND BATHROOM ACCESSORIES HOLDER
Donald J. Asenbauer, 13820 E. Close St., Whittier, Calif. 90605
Filed Mar. 29, 1971, Ser. No. 129,301
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—91



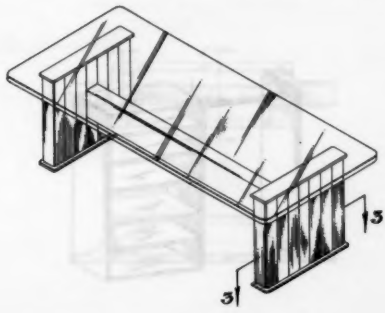
225,949
TABLE
Frank R. Torrey, 9805 Dallas Ave., Silver Spring, Md. 20901
Filed Feb. 19, 1971, Ser. No. 117,192
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



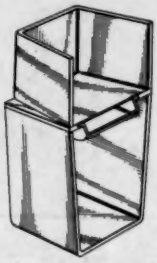
225,950
TABLE
Joseph E. Kienel, P.O. Box K, Acworth, Ga. 30101
Filed Apr. 26, 1971, Ser. No. 137,747
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



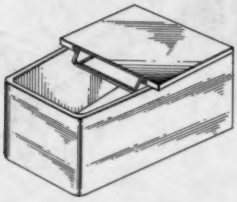
225,951
TABLE
Joseph E. Kienel, P.O. Box K, Acworth, Ga. 30101
Filed Apr. 23, 1971, Ser. No. 136,892
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



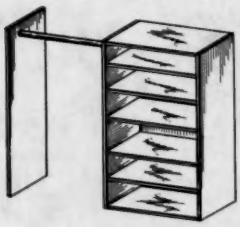
225,952
STUDY CARREL
Frank R. Torrey, 9805 Dallas Ave., Silver Spring, Md. 20901
Filed Feb. 19, 1971, Ser. No. 117,195
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—181



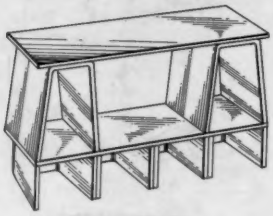
225,953
STUDENT DESK
Frank R. Torrey, 9805 Dallas Ave., Silver Spring, Md. 20901
Filed Feb. 19, 1971, Ser. No. 117,210
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—181



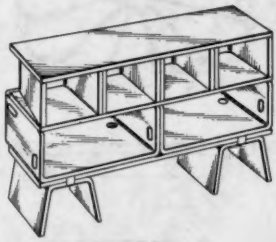
225,954
COMBINED CLOTHES RACK AND STORAGE SHELF UNIT
Michael Schachel, Shadow Ridge Road, Franklin Lakes, N.J. 07417
Filed Nov. 27, 1970, Ser. No. 26,183
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—189



225,955
COMBINED ROOM DIVIDER AND STORAGE UNIT
Frank R. Torrey, 9805 Dallas Ave., Silver Spring, Md. 20901
Filed Feb. 19, 1971, Ser. No. 117,208
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—189

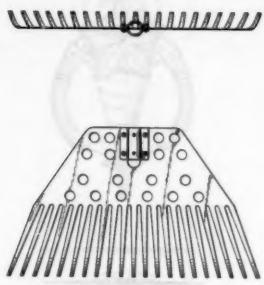


225,956
COMBINED STUDY CARREL AND STORAGE UNIT
Frank R. Torrey, 9805 Dallas Ave., Silver Spring, Md. 20901
Filed Feb. 19, 1971, Ser. No. 117,206
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—190



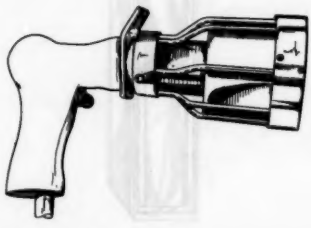
225,957
FURNITURE PANEL OR SIMILAR ARTICLE
Richard M. Chapin, Charlotte, N.C., assignor to Dolly Madison Industries, Huntingburg, Ind.
Filed Jan. 4, 1971, Ser. No. 103,961
Term of patent 3½ years
Int. Cl. D6—*99*
U.S. Cl. D6—193

225,958
RAKE
Francis O. Gibbs, Greensboro, N.C., assignor to Southern Mechanical Products Company, Greensboro, N.C.
Filed Jan. 18, 1971, Ser. No. 107,614
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—13

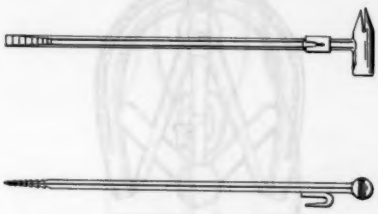


225,959
CASTER WRENCH
William S. Lee, % Lee Moving & Storage, 760 S. Jefferson Davis Parkway, New Orleans, La. 70116
Filed May 18, 1971, Ser. No. 144,704
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—21

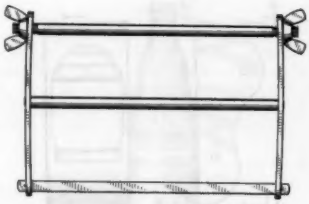
225,960
HEAT GUN
Jimmy C. Ray, Rte. 2, P.O. Box 33, Grayson, Tex. 75020
Filed Jan. 27, 1971, Ser. No. 110,381
Term of patent 14 years
Int. Cl. D8—*05;* D26—*02*
U.S. Cl. D8—30



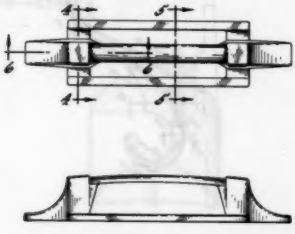
225,961
COMBINATION TOOL
Perry W. Scdoris, 11115 SE. Stark St., Portland, Oreg. 97201
Filed Feb. 8, 1971, Ser. No. 113,812
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—81



225,962
HAND SAW
Wallace G. Ferry, Scotch Plains, N.J., assignor to Ferry Enterprises, Inc., Edison, N.J.
Filed Apr. 7, 1971, Ser. No. 132,254
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—96

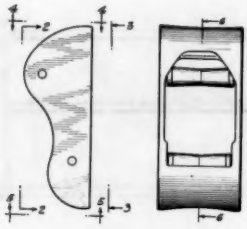


225,963
PULL
La Verne E. Clayton, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed July 1, 1971, Ser. No. 159,080
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—159



225,964
DOOR KNOCKER OR THE LIKE
Walter G. Ballou, R.F.D. 2, Iron Mine Hill Road, North Smithfield, R.I.
Filed Jan. 18, 1971, Ser. No. 107,612
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—177

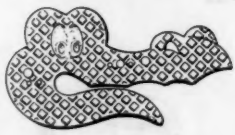
225,965
FLAGPOLE ENTRY
Theodore F. Schmit, Prospect Heights, Ill., assignor to Electronic Flag Poles, Inc., Maywood, Ill.
Filed Aug. 20, 1971, Ser. No. 173,739
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—216



225,966
GARMENT HOOK
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed June 1, 1971, Ser. No. 149,118
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—254

225,967
HANGER FOR PICTURES, MIRRORS, PLAQUES OR THE LIKE
Lee Richard Chasen, Port Chester, N.Y., assignor to Coats & Clark, Inc., New York, N.Y.
Filed June 11, 1971, Ser. No. 152,478
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—257

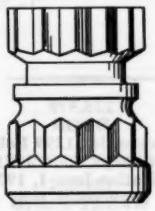
225,968
CLOSURE CLIP FOR BAGS OR THE LIKE
Jack E. Crawford, Pittsford, Albert B. Martone, Canandaigua, and Robert H. Olson, Pittsford, N.Y., assignors to Mobil Oil Corporation
Filed Oct. 7, 1971, Ser. No. 187,587
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—259



225,969
HAMPER
Marvin D. Rosenberg, Glencoe, Ill., assignor to Convenience Locker Corp., Chicago, Ill.
Filed Nov. 6, 1970, Ser. No. 25,858
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D49—8.2

225,970
SCREW
Thomas P. O'Donnell, Kings County, N.Y.
(200 Highland Blvd., Brooklyn, N.Y. 11207)
Filed Aug. 16, 1968, Ser. No. 13,167
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—267

225,971
NUT
George S. Wing, Palos Verdes Estates, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.
Filed June 19, 1970, Ser. No. 23,568
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—273



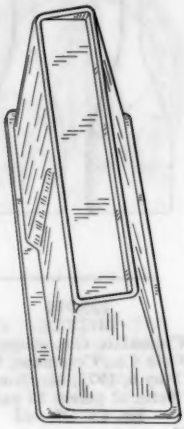
225,972
BOTTLE
Bhupendra N. Khetani, Vernon, Conn., assignor to Monsanto Company, St. Louis, Mo.
Filed Sept. 24, 1970, Ser. No. 25,173
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—37

225,973
BOTTLE OR THE LIKE
Robert Setrakian, 21 Turnagain Road, Kentfield, Calif. 94904
Filed May 26, 1971, Ser. No. 147,307
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—72

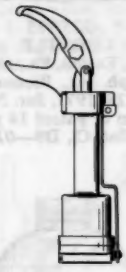
225,974
BOTTLE
William Barth, Columbus, Ga., assignor to Royal Crown Cola Co., Columbus, Ga.
Filed May 6, 1971, Ser. No. 141,085
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—100

225,975
BOTTLE
William E. Danjczek, Easton, Pa., assignor to Koh-I-Noor Rapidograph, Inc., Bloomsburg, N.J.
Filed July 28, 1971, Ser. No. 167,090
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—158

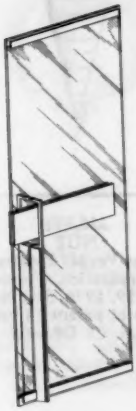
225,976
COMBINED SOAP HOLDER AND COVER FOR WATER FIXTURES
Albert Lins, Bergstrasse 27, Kusnacht, Switzerland
Filed June 25, 1971, Ser. No. 157,076
Claims priority, application Switzerland Feb. 3, 1971
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—24



225,977
POULTRY NECK CUTTER
Edward K. Leffler, West Allis, and Kenneth A. Kraft and Calvin Hansen, Milwaukee, Wis., assignors to John Mohr & Sons, Milwaukee, Wis.
Filed Feb. 1, 1971, Ser. No. 111,214
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D11—1

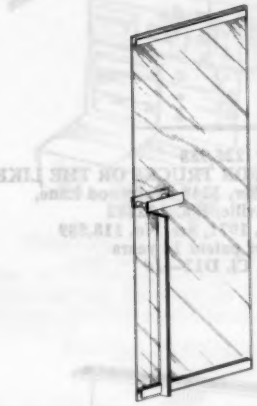


225,978
DOOR
William J. Horgan, Jr., 1299 Folkstone Drive, Pittsburgh, Pa. 15216
Original design application June 1, 1970, Ser. No. 23,254. Divided and this application June 17, 1971, Ser. No. 154,249
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1



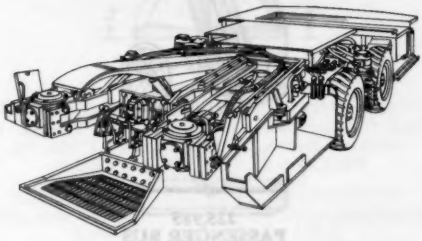
225,979
DOOR
William J. Horgan, Jr., 1299 Folkstone Drive, Pittsburgh, Pa. 15216
Original design application June 1, 1970, Ser. No. 23,254. Divided and this application June 17, 1971, Ser. No. 154,247
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1

225,980
DOOR
William J. Horgan, Jr., 1299 Folkstone Drive, Pittsburgh, Pa. 15216
Original design application June 1, 1970, Ser. No. 23,254. Divided and this aplication June 17, 1971, Ser. No. 154,250
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1

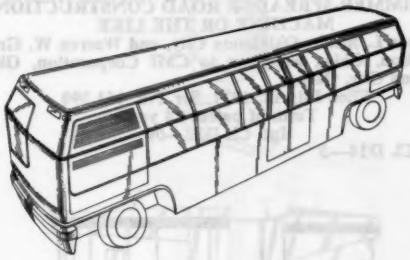


225,981
STAIR TREAD
Culver S. Brown, 734 Melville Ave., Palo Alto, Calif. 94301
Filed Jan. 26, 1970, Ser. No. 21,177
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—7

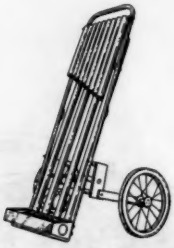
225,982
ROOF DRILLING AND BOLTING MACHINE
John B. Long, Oak Hill, W. Va., assignor to Marmon Group, Inc., Chicago, Ill.
Filed Mar. 4, 1971, Ser. No. 121,227
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—3 A



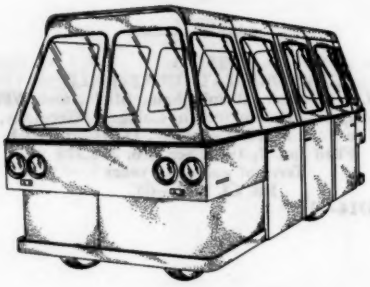
225,983
TRANSPORTATION VEHICLE
Walter H. Gollwitzer, Birmingham, Mich., and William B. Shenk, Jr., Rodenkirchen Cologne, Germany, assignors to Ford Motor Company, Dearborn, Mich.
Filed Jan. 7, 1972, Ser. No. 216,328
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—3



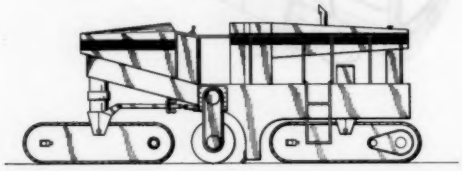
225,984
WHEELED GOLF CLUB CARRIER
Stuart Thomas Guthrie Murray, Bray-on-Thames, and Maurice John Gillings, London, England, assignors to Murray Components Limited, London, England
Filed June 11, 1971, Ser. No. 152,471
Claims priority, application Great Britain Dec. 11, 1970
Term of patent 7 years
Int. Cl. D12—*02*
U.S. Cl. D14—3



225,985
PASSENGER BUS
Charles W. Poole, Redlands, Calif., assignor to Westinghouse Electric Corporation
Filed May 24, 1971, Ser. No. 146,612
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—3

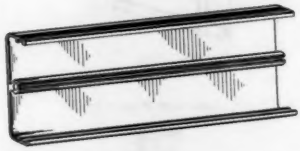


225,986
TRIMMER-SPREADER ROAD CONSTRUCTION MACHINE OR THE LIKE
Thomas L. Steele, Oklahoma City, and Warren W. Grist, Yukon, Okla., assignors to CMI Corporation, Oklahoma City, Okla.
Filed July 12, 1971, Ser. No. 161,390
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—3

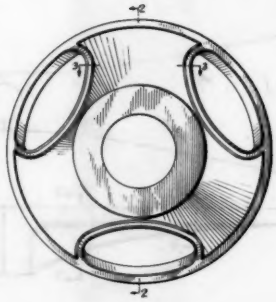


225,987
ARTICLE CARRIER FOR VEHICLE INTERIOR
Stephen R. Stewart, Upland, Calif. (3122 Schweitzer Drive, Topanga, Calif. 90290)
Filed June 10, 1971, Ser. No. 152,005
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6 T

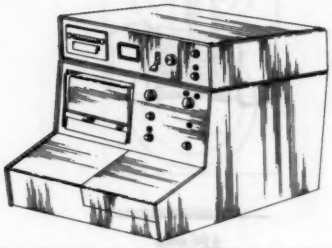
225,988
MIRROR FRAME FOR TRUCKS OR THE LIKE
Kenneth J. Fischer, 3248 Fruitwood Lane, Jacksonville, Fla. 32202
Filed Feb. 24, 1971, Ser. No. 118,589
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



225,989
WHEEL CENTER UNIT
Daniel C. Chadwick, 316 S. San Gabriel Blvd., North Hollywood, Calif. 91776
Filed Jan. 16, 1970, Ser. No. 20,956
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—30



225,990
OPTICAL ELECTROPHORESIS SCANNER
Jan A. Van den Broek, Ann Arbor, and George W. Toma, Dexter, Mich., assignors to Transidyne General Corporation, Ann Arbor, Mich.
Filed June 1, 1971, Ser. No. 149,133
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D16—2



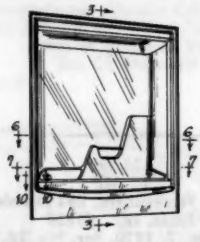
225,991
FIRE EXTINGUISHER CABINET
John Blendl, Warren, Mich., assignor to Metal Cabinet Company, Warren, Mich.
Filed May 26, 1971, Ser. No. 147,282
Term of patent 14 years
Int. Cl. D29—*01*
U.S. Cl. D16—2

225,992
PHARMACEUTICAL TABLET
Theodor Langauer, Muttenz, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland
Filed Sept. 29, 1969, Ser. No. 19,330
Term of patent 14 years
Int. Cl. D28—*01*
U.S. Cl. D16—3

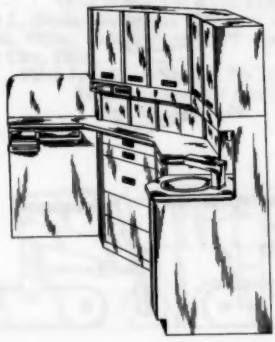
225,993
PUMP
Chester H. Wickenberg, 164 Division St., Elgin, Ill. 60120
Filed Dec. 7, 1970, Ser. No. 26,338
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—14

225,994
TAP OUTLET MEMBER
Martyn Omar Rowlands, Epping, England, assignor to IMI Developments Incorporated, Birmingham, England
Filed Jan. 27, 1970, Ser. No. 21,103
Claims priority, application Great Britain July 28, 1969
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34

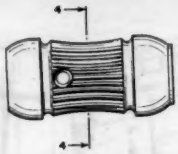
225,995
COMBINATION BATHTUB AND SHOWER UNIT
Fred C. Alexander, New Castle, Pa., assignor to Universal-Rundle Corporation, New Castle, Pa.
Filed June 23, 1971, Ser. No. 156,168
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49



225,996
MODULAR CONSOLE FOR A DENTAL OPERATORY
John M. Schwartz, Des Moines, Iowa, assignor to Den-Tal-Ez Mfg. Co., Des Moines, Iowa
Filed Feb. 7, 1972, Ser. No. 224,384
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—1 B



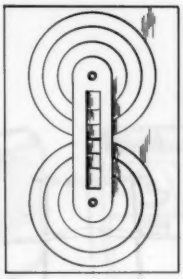
225,997
KNOB FOR AN ENDODONTIC INSTRUMENT
William Henry Boggs, 18887 Valley View Drive, Riverview, Mich. 48192, and George Reed Govers, 118 Granite St., Medfield, Mass. 02052
Filed Dec. 21, 1970, Ser. No. 26,734
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—1



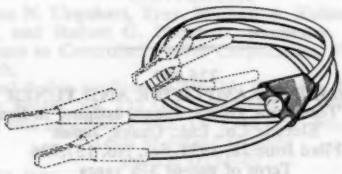
225,998
BLADE SET FOR DENTAL INSTRUMENT
James Vannes Boone, Meadows Bldg., Dallas, Tex. 75206
Original design application Oct. 13, 1969, Ser. No. 19,514. Divided and this application Apr. 1, 1971, Ser. No. 130,569
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1

225,999
DENTAL CUSPIDOR
John Daniel Krantz, Camarillo, Calif., assignor to Coastal Dynamics Corporation
Filed Sept. 27, 1971, Ser. No. 184,317
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—1

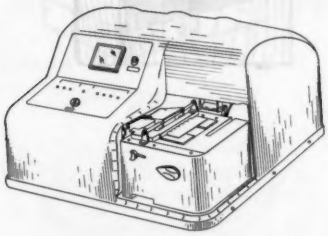
226,000
WORD TRANSFORMER TEACHING DEVICE OR SIMILAR ARTICLE
Caleb Gattegno, Manhattan, N.Y., assignor to Educational Solutions, Inc., New York, N.Y.
Filed Jan. 14, 1971, Ser. No. 106,628
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1



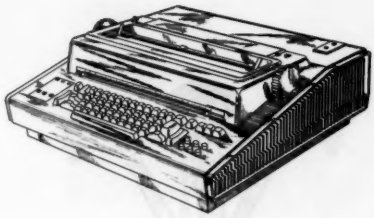
226,001
BATTERY JUMPER CABLE ASSEMBLY WITH INTEGRAL LIGHT
Allan M. Coleman, Highland Park, Ill., and Carl J. Hawkins and Raymond J. Abair, Toledo, Ohio, assignors to Coleman Cable & Wire Company, River Grove, Ill.
Filed July 12, 1971, Ser. No. 161,391
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1



226,002
DATA TRANSCEIVER
Paul H. Butler, Barry E. Duggan, and James S. Koonce, Huntsville, Ala., assignors to Credex Corporation
Filed June 3, 1970, Ser. No. 23,295
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

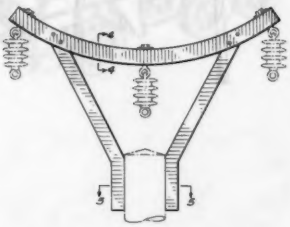


226,003
DATA INPUT-OUTPUT TERMINAL
Melvin Rudin, Palo Alto, Calif., assignor to Datel Corporation, McLean, Va.
Filed Nov. 4, 1970, Ser. No. 25,826
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

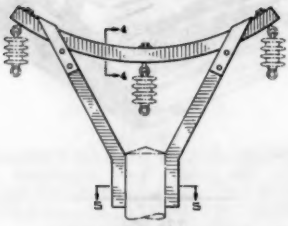


226,004
ELECTRONIC CALCULATING MACHINE
Shigetoshi Hazama, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed July 8, 1971, Ser. No. 160,975
Claims priority, application Japan Jan. 16, 1971
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

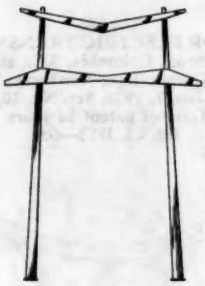
226,005
CROSS ARM FOR ELECTRIC TRANSMISSION POLE
Arthur L. Scott, Columbia, S.C., assignor to C/P Corporation, Newberry, S.C.
Filed Jan. 7, 1970, Ser. No. 20,803
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—12



226,006
CROSS ARM FOR ELECTRIC TRANSMISSION POLE
Arthur L. Scott, Columbia, S.C., assignor to C/P Corporation, Newberry, S.C.
Filed Jan. 7, 1970, Ser. No. 20,802
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—12

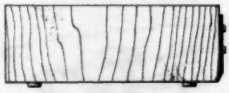


226,007
TRANSMISSION LINE TOWER
Richard J. Donovan, Winchester, and William G. Finney, Natick, Mass., assignors to Boston Edison Company, Boston, Mass.
Filed Feb. 5, 1971, Ser. No. 113,114
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—12

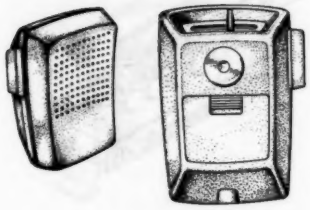


226,008
TRANSMISSION LINE TOWER
Richard J. Donovan, Winchester, and William C. Finney, Natick, Mass., assignors to Boston Edison Company, Boston, Mass.
Filed Feb. 4, 1971, Ser. No. 112,841
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—12

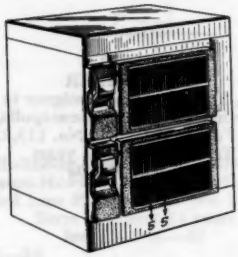
226,009
COMBINED AMPLIFIER AND TUNER
Naoki Tominaga, Osaka, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan
Filed June 28, 1971, Ser. No. 157,796
Term of patent 3½ years
Int. Cl. D14—*03*
U.S. Cl. D26—14



226,010
MICROPHONE
Robert Podall, Northfield, Ill., assignor to Conrac Corporation, New York, N.Y.
Filed Jan. 14, 1971, Ser. No. 106,620
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



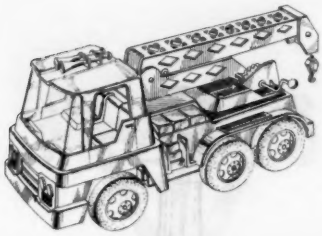
226,011
ALTERNATING TO DIRECT CURRENT CONVERTER
Thomas N. Urquhart, Troy, Michael A. Koltuniak, Warren, and Robert G. Plantholt, Rochester, Mich., assignors to Controlled Power Corporation, Farmington, Mich.
Original design application July 18, 1969, Ser. No. 18,274, now Patent No. 222,146, dated Oct. 5, 1971. Divided and this application Oct. 12, 1970, Ser. No. 25,451
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15



226,012
STATUETTE
James Robert Black, Jr., Ann Arbor, Mich., assignor to People Products, Troy, Mich.
Filed Jan. 13, 1971, Ser. No. 106,321
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—24

226,013
TOY CEMENT MIXER
Toyotsugu Ogasawara, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan
Filed Aug. 31, 1971, Ser. No. 176,787
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ

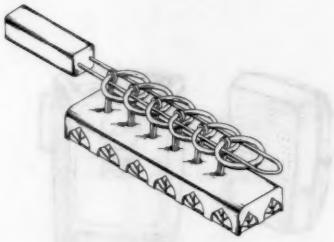
226,014
TOY CRANE TRUCK
Toyotsugu Ogasawara, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan
Filed Aug. 31, 1971, Ser. No. 176,789
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



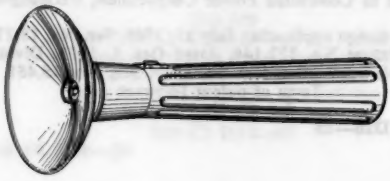
226,015
TOY BUILDING BLOCK
Alwin J. Stahel II, New Brighton, Minn., assignor to General Foods Corporation, White Plains, N.Y.
Filed Oct. 30, 1970, Ser. No. 25,728
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

226,016
TOY CONSTRUCTION PIECE OR THE LIKE
David Podell, 61 Christopher St., Montclair, N.J. 07042
Filed Mar. 24, 1971, Ser. No. 127,856
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

226,017
ORNAMENTAL PUZZLE TOY
Harold Graham, Boise, and Vinton L. Stanfield, Burley, Idaho, assignors of a fractional part interest to Almeta C. Dean, Pasadena, Calif.
Filed Apr. 22, 1971, Ser. No. 136,654
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

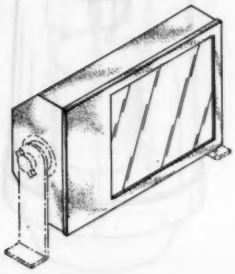


226,018
VACUUM BALL HOLDING AND PROPELLING DEVICE
Richard N. Carver, Erie, Pa., assignor to Louis Marx & Co., Inc.
Filed Apr. 19, 1971, Ser. No. 135,531
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



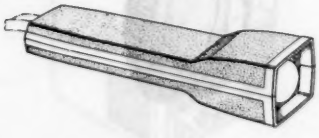
226,019
HAND MIXER
Ralph Morris, St. Paul, Minn., assignor to Fingerhut Manufacturing Company, Minneapolis, Minn.
Filed Feb. 8, 1971, Ser. No. 113,810
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—1

226,020
FLOODLIGHT
Melvin R. Anderson, Avon Lake, and Donald E. Husby, Fairview Park, Ohio, assignors to Westinghouse Electric Corporation
Filed Feb. 16, 1970, Ser. No. 21,463
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—20

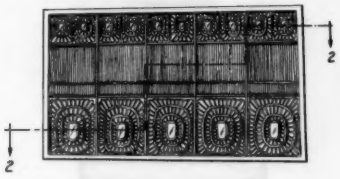


226,021
PHOTOTHERAPY LAMP
Howard S. Haft, Chicago, Ill., assignor to Art Specialty Company
Filed June 24, 1970, Ser. No. 23,638
Term of patent 14 years
Int. Cl. D26—*99*
U.S. Cl. D48—20

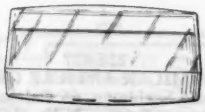
226,022
LIGHT
Norman Holtzman, Los Angeles, Calif., assignor to Hanson-Hawk, Inc., Chatsworth, Calif.
Filed June 29, 1971, Ser. No. 158,145
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24



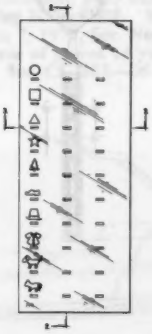
226,023
FRONT PANEL FOR A MERCHANDISING MACHINE
Walter L. Koch, 15 Seymour St., Caldwell, N.J. 07006, and Robert P. Franklin, 23 Woodlawn Terrace, R.C. 1, Jefferson Township, N.J.
Filed July 8, 1971, Ser. No. 160,967
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D52—3



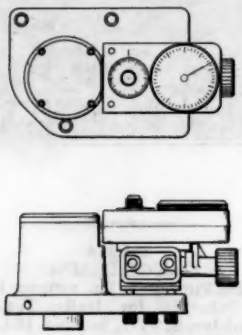
226,024
GAUGE CASING
Ted A. Bell, Pittsburgh, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Jan. 5, 1971, Ser. No. 104,202
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6



226,025
TEST SCORING TEMPLATE OR SIMILAR ARTICLE
Carlton M. Singleton, Arlington, Va., assignor to Automata Corporation, Richland, Wash.
Filed June 10, 1971, Ser. No. 152,007
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D52—6

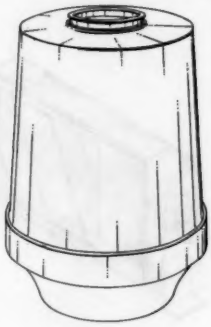


226,026
MACHINE TOOL FEED INDICATOR
James R. Huser, 3330 E. Summer Ave., and Paul N. Coutz, 6220 S. Keystone Ave., both of Indianapolis, Ind. 46227
Filed Apr. 13, 1971, Ser. No. 133,774
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—6

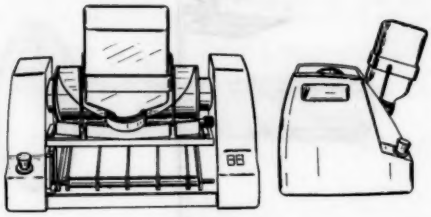


226,027
SPOON OR SIMILAR ARTICLE OF FLATWARE
Ronald Sneidman, 66 Calvin Ave., Syosset Estates, N.Y. 11791
Filed Aug. 6, 1971, Ser. No. 176,377
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

226,028
FOOD WASTE DISPOSER
Robert W. Kennedy, Hilliard, Ohio, assignor to Westinghouse Electric Corporation
Filed June 30, 1971, Ser. No. 158,665
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1

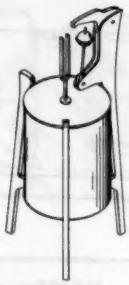


226,029
PANCAKE MAKING MACHINE
Henri Lescure, Selongey (Cote d'Or), France
Filed Mar. 29, 1971, Ser. No. 129,292
Claims priority, application France Oct. 6, 1970
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D55—1

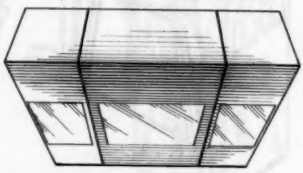


226,030
MUSIC BOX
Robert B. Wood, 1439 Essex Way, San Jose, Calif. 95117
Filed Apr. 8, 1971, Ser. No. 132,630
Term of patent 14 years
Int. Cl. D17—*99*
U.S. Cl. D56—1

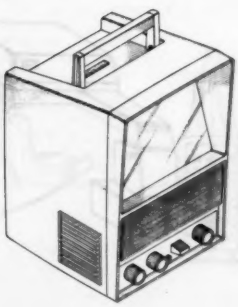
226,031
COMBINED MASTER TUNING FORK, RESONATOR SUPPORT AND STRIKER OR SIMILAR ARTICLE
Robert H. Peirce, 1212 Navlet Court, Sunnyvale, Calif. 94087
Filed Apr. 13, 1971, Ser. No. 133,778
Term of patent 3½ years
Int. Cl. D17—*04*
U.S. Cl. D56—1 E



226,032
CAMERA HOUSING FOR SURVEILLANCE SYSTEMS
Allen I. Siesholtz, 250 Bergen Ave., New Milford, N.J. 07646
Filed Apr. 8, 1971, Ser. No. 132,633
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1

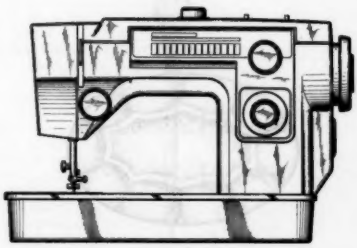


226,033
REAR SCREEN MOTION PICTURE PROJECTOR
Alex J. Procop, 18331 Parthenia St., Northridge, Calif. 91324
Filed July 2, 1971, Ser. No. 159,584
Term of patent 14 Years
Int. Cl. D16—*02*
U.S. Cl. D61—1

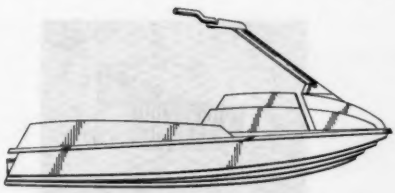


226,034
COMBINED CARRYING CASE AND MOTION PICTURE PROJECTOR OR SIMILAR ARTICLE
Robert Oberheim, Neu-Isenburg, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed Feb. 3, 1971, Ser. No. 112,507
Claims priority, application Germany Aug. 14, 1970
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1

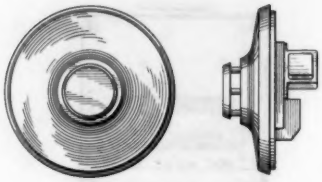
226,035
SEWING MACHINE
Yasuaki Yamamoto, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Filed July 29, 1970, Ser. No. 24,217
Claims priority, application Japan June 20, 1970
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1



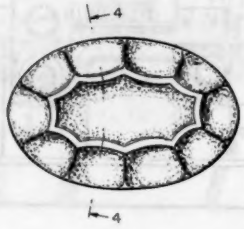
226,036
JET PROPELLED AQUATIC VEHICLE
Clayton J. Jacobson, 5403 Seacrest Drive, Rolling Hills, Calif. 90274
Filed Jan. 7, 1971, Ser. No. 104,833
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1



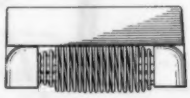
226,037
FIRE DETECTOR
Thomas G. Cannon and Fred L. Dixson, Fort Collins, Colo., assignors to Statitrol Corporation, Lakewood, Colo.
Filed May 10, 1971, Ser. No. 142,088
Term of patent 14 years
Int. Cl. D29—*01*
U.S. Cl. D72—1



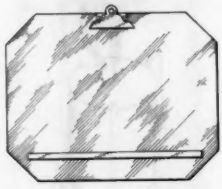
226,038
SOAP CAKE
Barbara Barere, 354 Carlton Ave., Brooklyn, N.Y. 11238
Filed May 10, 1971, Ser. No. 142,110
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D73—1



226,039
COMBINED COIN AND MEMO HOLDER
Martin Krone, 60 E. 42nd St., New York, N.Y. 10017
Filed Dec. 21, 1970, Ser. No. 26,580
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—1

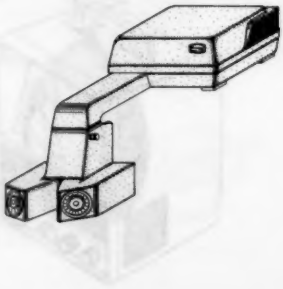


226,040
CLIPBOARD ATTACHMENT FOR A VEHICLE STEERING WHEEL
Robert Beerli, Jr., 9456 La Luna, Fountain Valley, Calif. 92708
Filed Jan. 6, 1972, Ser. No. 225,030
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D74—2

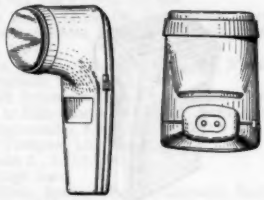


226,041
WRITING IMPLEMENT CONTAINER
Cecil B. Woofter, Newton, Iowa, assignor to The Vernon Company
Filed June 24, 1971, Ser. No. 156,590
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—5

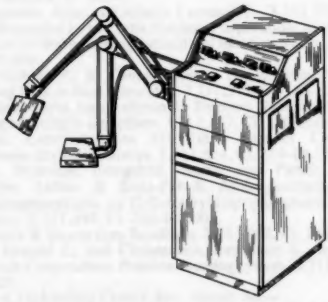
226,042
HYDROMASSAGE UNIT FOR SWIMMING POOL
Roy A. Jacuzzi, Morago, and Peter L. Kosta, Lafayette, Calif., assignors to Jacuzzi Research, Inc.
Filed May 10, 1971, Ser. No. 142,087
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D83—1



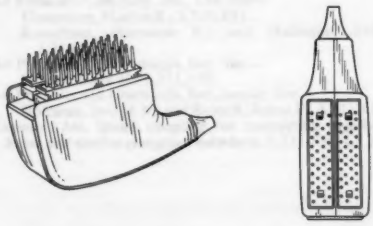
26,043
FACIAL MASSAGER
Martin J. Wolff, West Haven, Conn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed May 21, 1971, Ser. No. 145,995
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1



226,044
SHORT-WAVE THERAPY APPARATUS
James N. Shirley, Overland Park, Fred M. Berry, Leawood, and Eugene C. Lipsky, Prairie Village, Kans., assignors to International Medical Electronics Ltd.
Filed Feb. 1, 1971, Ser. No. 111,792
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1



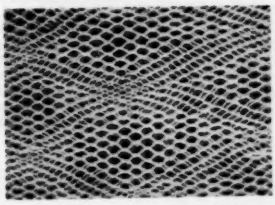
226,045
HAIR AND MASSAGEBRUSH
Knut Otto Yran, Eindhoven, Netherlands, assignor to United States Philips Corporation
Filed Mar. 17, 1971, Ser. No. 125,454
Claims priority, application Switzerland Sept. 28, 1970
Term of patent 14 years
Int. Cl. D24—*04*; D4—*02*
U.S. Cl. D83—1



226,046
HAIR CURLER
Ann Di Gaetano, Antonia Di Gaetano, and Guiseppina Di Gaetano, all of 390 Newport, Detroit, Mich. 48251
Filed Jan. 6, 1971, Ser. No. 104,546
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10

226,047
HAIR CURLER
James Edgar Tucker, Chicago, Ill., assignor to The Gillette Company, Boston, Mass.
Filed July 12, 1971, Ser. No. 161,388
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10

226,048
HIGH-LOFT NONWOVEN MATERIAL
Robert J. Stumpf, Appleton, and William J. Mattes and Herman G. Minshell, Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Oct. 5, 1970, Ser. No. 25,348
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1



226,049
THROW RUG
Archie E. Warnberg, 3600 NW. 43rd St., Oklahoma City, Okla. 73112
Filed Dec. 11, 1970, Ser. No. 26,409
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D92—21

226,050
ELECTRIC SHAVER
Hermann R. Schaefer, Bridgeport, Conn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Nov. 16, 1970, Ser. No. 25,997
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF JANUARY, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. T. I. Recreation, Inc., mesne: *See*—
Mulu, Ernest, 3,711,099.

AB Perma System: *See*—
Persson, Per Lage, 3,710,464.

Abbondio, Antonio, to Ciba-Geigy AG. Double beam optical densitometer. 3,711,208, Cl. 356-202.000.

Abdo, Milton K., to Mobil Oil Corporation. Method of clarifying polysaccharide solutions. 3,711,462, Cl. 260-209.000.

Abe, Masaaki: *See*—
Kurahashi, Koichiro; Nakada, Masanori; Nishimura, Koichi; and Abe, Masaaki, 3,711,643.

Abelin, Rudolf; Johansson, Nils Soren Lennart; and Hakansson, Andres Borje, to Saab-Scania Aktiebolag. Jettisonable pod for aircraft carried rocket missiles. 3,710,678, Cl. 89-1.816.

Abitiba Paper Company Ltd.: *See*—
Eynon, John E., 3,710,969.

Abruzzi, Pierluigi: *See*—
Vargiu, Silvio; Spelta, Osvaldo; Giovanni, Sesto S.; and Abruzzi, Pierluigi, 3,711,431.

ACF Industries Incorporated: *See*—
Beishir, Richard Bert, 3,710,766.

Action Packaging Corporation: *See*—
Kugler, Robert J., 3,711,011.

Adams, Charles D.; and Wommack, Joel B., Jr., to Du Pont de Nemours, E. I., and Company. Process for preparing alkyl 2-benzimidazole-carbamates. 3,711,504, Cl. 260-309.200.

Adams, James E.: *See*—
Wysocki, Joseph J.; Adams, James E.; and Becker, James H., 3,711,713.

Adams, James E., Jr.; and Dailey, John L., to Xerox Corporation. Optical notch filter. 3,711,181, Cl. 350-157.000.

Adams, John H.: *See*—
Hills, Richard E.; Adams, John H.; Anderson, Lloyd E., Jr.; Bliss, Woodrow E., Jr.; Hamren, Fred W., Jr.; Honath, Harry F.; and Murphy, John C., 3,710,582.

Adams, Leonard, Jr.: *See*—
Alexander, John; and Adams, Leonard, Jr., 3,711,358.

Adams, Raymond J., to Curtis Nuclear Corporation. Method for determination of thyro-binding capacity of blood proteins. 3,711,247, Cl. 23-230.00b.

Adams, Robert P., to Cenco Medical Health Supply Corporation. Rotating flask culture apparatus. 3,711,379, Cl. 195-127.000.

Adiego de la Parra, Luis Antonio, to Empresa Nacional de Optica, S.A. System of multiple objectives. 3,711,187, Cl. 350-254.000.

Admiraal, Lambertus, to MacMillan Bloedel Limited. T-ring microwave drying apparatus. 3,711,674, Cl. 219-10.550.

Adolphi, Heinrich; Eilingsfeld, Heinz; and Patsch, Manfred, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. O,O-dialkylthionophosphoric or O,O-dialkyldithiophosphoric esters of oxadiazoles. 3,711,494, Cl. 260-307.00g.

Adra, Tarek B. Heavy duty floodlight. 3,711,702, Cl. 240-47.000.

Adrian, Donald J.; and Christensen, Lawrence E., to Astrophysics Research Corporation. Position locating system. 3,711,856, Cl. 343-103.000.

Advanced Technology Center, Inc., mesne: *See*—
Petersen, Donald H.; and Schwemer, Warren C., 3,711,615.

Aeropet, Inc.: *See*—
Gregory, Frederick S., 3,710,761.

Ageev, Nikolai Ivanovich: *See*—
Turetsky, Lazar Isaakovich; Gryzlov, Anatoly Grigorievich; Proskurovsky, Filipp Yakovlevich; Lomachenko, Gennady Nikolaevich; and Ageev, Nikolai Ivanovich, 3,710,821.

Agfa-Gevaert: *See*—
Van Paesschen, August Jean; Van Gossum, Lucien Janbaptist; and Priem, Jan Jozef, 3,711,284.

Agfa-Gevaert Aktiengesellschaft: *See*—
Gehlert, Rolf; and Schmidt, Ulrich, 3,711,195.
Wagner, Karl, 3,710,704.

Ahldca Corporation: *See*—
Deaton, David W., 3,710,791.

Ahramjian, Leo, to Du Pont de Nemours, E. I., and Company. Safety glass. 3,711,364, Cl. 161-190.000.

Air Preheater Company, Inc., The: *See*—
Finnemore, Harlan E., 3,710,851.
Kurschner, Hermann E.; and Mahoney, Robert Emmett, 3,710,850.

Air Products and Chemicals, Inc.: *See*—
Betzler, Mark H., 3,711,130.

Air Products and Chemicals, Inc., mesne: *See*—
Hoffman, Joseph K.; and Russell, James P., 3,711,531.

Akesson, Ale. Quick coupling for connecting together conductors, hoses and similar elongated members. 3,711,135, Cl. 287-104.000.

Akiyama, Hideaki; and Ando, Sadanao, to Kabushiki Kaisha Ricoh. Electronic flash device. 3,711,741, Cl. 315-241.00p.

Aktiebolaget Bofors: *See*—
Hellner, Lars Ivar; and Hede, Nils Erik Allan, 3,711,276.
Matter, Max; and Michel, Karl, 3,711,496.

Aktiebolaget Karlstads Mekaniska Werkstad: *See*—
Ramback, Carl-Gustaf; and Ericsson, Nils Olof, 3,711,220.

Aktiebolaget Scania Vabis: *See*—
Almqvist, Bo Karl Loritz, 3,711,221.

AL E. & C. Ltd.: *See*—
Nelson, Warren Leonard, 3,710,547.

Alberico, Mario: *See*—
Pomella, Piero; and Alberico, Mario, 3,711,814.

Alecci, Donald E.: *See*—
Sinnott, David J.; Alecci, Donald E.; and Kaplan, Louis, 3,710,698.

Alessio, Sergio A.; and Chow, Weichien, to Bunker-Ramo Corporation, The. Numerically controlled automatic wiring system. 3,710,441, Cl. 29-624.000.

Alexander, John; and Adams, Leonard, Jr., to Finn Industries, Inc., The. Assembly for applying coupons to carton blanks. 3,711,358, Cl. 156-571.000.

Alfa-Laval AB: *See*—
Murkes, Jakob, 3,710,949.

Alferov, Jury Fedorovich: *See*—
Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Dubinsky, Rudolf Solomonovich; Latash, Jury Vadimovich; Emelyanenko, July Georgievich; and Baglai, Vitaly Mikhailovich, 3,711,616.

Alfrey, Turner, Jr.; and Schrenk, Walter J., to Dow Chemical Company, The. Highly reflective thermoplastic bodies for infrared, visible or ultraviolet light. 3,711,176, Cl. 350-1.000.

All-Power Manufacturing Co.: *See*—
Brown, Gordon R.; and Michalek, Margaret E. (said Brown assor. to), 3,710,589.

Allen, Michael George, to Desoutter Brothers Limited. Impact wrench or screwdriver. 3,710,873, Cl. 173-12.000.

Allen, Michael George; and Tiers, George Van Dyke, to Minnesota Mining and Manufacturing Company. Polyol solutions of xanthates as catalysts in making polyisocyanurates. 3,711,444, Cl. 260-77.5nc.

Allen, Richard A. Automobile carrier. 3,710,999, Cl. 224-42.03b.

Allied Chemical Corporation: *See*—
Figiel, Francis John, 3,710,450.
Lohr, Thomas E., 3,711,115.

Allied Colloids Manufacturing Company Limited: *See*—
Heap, Vernon; and Rothwell, Eric, 3,711,323.

Allington, Robert W., to Instrumentation Specialties Company. Apparatus for determining and characterizing the slopes of time-varying signals. 3,711,779, Cl. 328-114.000.

Allis-Chalmers Manufacturing Company: *See*—
Dethlefsen, Rolf, 3,711,665.
Weseloh, Roger J.; and Whaley, Warren R., 3,710,774.

Almqvist, Bo Karl Loritz, to Aktiebolaget Scania Vabis. Device for varying the pitch of propeller blades. 3,711,221, Cl. 416-157.000.

Alpers, Frederick C., to United States of America, Navy. Television target tracking system. 3,711,639, Cl. 178-6.800.

Alsted, David A. Belt aligning apparatus. 3,710,927, Cl. 198-202.000.

Aluminite Manufacturing Company, Inc.: *See*—
Andres, Edward J., 3,710,839.

Alvi, Syed M. S.: *See*—
Sell, Victor L.; and Alvi, Syed M. S., 3,711,839.

Alza Corporation: *See*—
Higuchi, Takeru; and Leeper, Harold M., 3,710,795.

Amel, Ronald T.: *See*—
Lyness, Warren I.; Amel, Ronald T.; and Booth, Gary E., 3,711,474.

Amerace Esna Corporation: *See*—
Flanagan, Robert M.; and Johnson, Glenn W., 3,711,797.

American Air Filter Company, Inc.: *See*—
Sexton, Robert W.; Brooks, Paul L.; and Carey, Jack M., 3,710,948.

American Can Company: *See*—
Feinberg, Jacob Howard, 3,711,391.

American Cyanamid Company: *See*—
Innes, John Edwin, 3,711,567.
Maulding, Donald Roy, 3,711,415.
Nagy, Daniel Elmer, 3,711,573.
Tomcufcik, Andrew Stephen; and Wilkinson, Raymond George, 3,711,613.

American Environmental Research Corporation: *See*—
Newkirk, Marc S.; and Falabella, Arnold G., 3,710,770.

American Express Investment Company: *See*—
Green, Philip S., 3,711,823.

American Home Products Corporation: *See—*
Diebold, James L.; and Wolf, Milton, 3,711,476.
American Hospital Supply Corporation: *See—*
Litvinoff, James R.; Evans, David F.; and Klug, Joseph R., 3,710,735.
American Newspaper Publishers Association Research Institute, Incorporated: *See—*
Hart, Charles H.; and Cashau, George R., 3,711,084.
American Optical Company, mesne: *See—*
Kavanagh, Arthur J., 3,711,722.
American Optical Corporation: *See—*
Bredemeier, Herbert C., 3,710,798.
Robinson, Charles C.; Graf, Robert E.; Young , Robert W.; and Sproul, Merrill F., 3,711,264.
Snitzer, Elias; Robinson, Charles C.; and Woodcock, Richard F., 3,711,787.
American Safety Equipment Corporation: *See—*
Jakob, Hans, 3,711,037.
American Sterilizer Company: *See—*
Kereluk, Karl, 3,711,378.
Amerola Products Corporation: *See—*
Mercla, Anthony, 3,711,154.
Ameron, Inc.: *See—*
O'Conner, James F.; and Black, Gordon L., 3,711,587.
AMF Incorporated: *See—*
Garrone, Franco, 3,710,561.
Richert, Walter J., 3,711,798.
Ammco Tools, Inc.: *See—*
Mitchell, Wallace F., 3,710,661.
Amon, Max; and Rosin, Seymour, to Kollsman Instrument Corporation. Large catadioptric objective. 3,711,184, Cl. 350-201.000.
Amort, Andrew L., to Xerox Corporation. Variable precision film drive. 3,711,002, Cl. 226-32.000.
AMP Inc.: *See—*
Schumacher, william Ludlow, 3,711,816.
AMP Incorporated: *See—*
Brandeau, Edward Peter; Chaffee, Quentin Roosevelt; and Gitt, Robert Lewis, 3,710,620.
Carter, Clyde Thomas; and Henschen, Homer Ernst, 3,711,817.
Werner, Walter Myers, 3,710,719.
Ampex Corporation: *See—*
Sell, Victor L.; and Alvi, Syed M. S., 3,711,839.
Andersen, Eilif, to Motorfabriken Bukh A/S. Reversing clutches with follow-up valve. 3,710,907, Cl. 192-87.170.
Andersen, Ronald E., to Central Engineering Company. Means for flexibly supporting an eductor tube used in testing jet engines. 3,710,617, Cl. 73-116.000.
Anderson, Amos R., to Packo, Joseph J., mesne. Compositions for sealing leaks. 3,711,305, Cl. 106-33.000.
Anderson, John R.: *See—*
Hamilton, Robert S.; Kingsbury, Albert W.; and Anderson, John R., 3,711,401.
Anderson, Lloyd E., Jr.: *See—*
Hills, Richard E.; Adams, John H.; Anderson, Lloyd E., Jr.; Bliss, Woodrow E., Jr.; Hamren, Fred W., Jr.; Honath, Harry F.; and Murphy, John C., 3,710,582.
Anderson, Robert F. Lead screw. 3,710,641, Cl. 74-424.80r.
Anderson, Steven A.: *See—*
Spence, John H.; Yang, Tung Han; and Anderson, Steven A., 3,710,952.
Anderson, Vincent, to Chicago Etching Corporation. Watchband calendar with jewelry-like surface. 3,710,489, Cl. 40-107.000.
Ando, Sadanao: *See—*
Akiyama, Hideaki; and Ando, Sadanao, 3,711,741.
Ando, Shizuo, to Pioneer Electronic Corporation. Controller device of an automatic telephone answering apparatus. 3,711,649, Cl. 179-6.00r.
Ando, Yujiro: *See—*
Saito, Takashi; and Ando, Yujiro, 3,711,796.
Andreasen, Alfred C., to New-Way Products Company. Die actuator. 3,710,410, Cl. 10-89.00r.
Andres, Edward J., to Aluminite Manufacturing Company, Inc. Adjustable sliding screen door. 3,710,839, Cl. 160-372.000.
Angliss, Ian Bruce; and Lipson, Menzie, to Commonwealth Scientific and Industrial Research Organization. Process for coloring keratinous fibres with pigment. 3,711,316, Cl. 117-55.000.
Anheuser-Busch, Inc.: *See—*
Ziegler, Homer F., Jr., 3,711,299.
Anken Chemical & Film Corporation, mesne: *See—*
Daniels, Neville H. G.; and Wright, Edward S., 3,710,434.
Anker-Werke AG: *See—*
Van Der Sel, Cornelius Gerrit, 3,711,830.
Anthony, Paul P., to PPG Industries, Inc. Bimetal spinel surfaced electrodes. 3,711,382, Cl. 204-1.00r.
Anzen Products, Inc.: *See—*
Lorenzen, Walter C., 3,710,817.
Aoki, Masaki: *See—*
Wada, Mitsuo; Mikoda, Masanari; Aoki, Masaki; and Hikino, Tadashi, 3,711,328.
Aoki, Takashi: *See—*
Sato, Kazuo; and Aoki, Takashi, 3,711,203.
Aoshima, Yasuo: *See—*
Nagano, Toshihiro; Suzuki, Matsuo; Hayashi, Isao; Kato, Takashi; Mochizuki, Hiroshi; Aoshima, Yasuo; Shibata, Kouji; and Takahashi, Toshiro, 3,711,313.
Apitz, Peter F., to Tamar Electronics, Inc. Traffic volume computer. 3,711,686, Cl. 235-150.240.
Applebay, George W.: *See—*
Couchman, James C.; and Applebay, George W., 3,710,557.
Arden, John. Load weight indicating apparatus. 3,710,880, Cl. 177-137.000.
Arizona Chemical Company, mesne: *See—*
Arlt, Herbert George, Jr.; and Conroy, Natalie Elaine, 3,711,270.
Arlt, Herbert George, Jr.; and Conroy, Natalie Elaine, to Arizona Chemical Company, mesne. 2,2'-Methylenebis (trans-3,5-dihydroxystilbene) and use as biocide. 3,711,270, Cl. 71-67.000.
Armco Steel Corporation: *See—*
Byrd, Fred; and Schnedler, Paul E., 3,711,320.
Smathers, Harry W.; and Moffa, Joseph, 3,711,129.
Armour, Donald F., to Monsanto Company. Spray dispensing cap and hinged closure. 3,710,989, Cl. 222-562.000.
Armstrong Cork Company: *See—*
Fritz, Thomas W.; Gilbo, Charles F.; and Johnson, Norman A., 3,710,522.
Landis, Elmer J., 3,711,346.
Armstrong, Jack W.: *See—*
Lanphere, Gerald B.; Bart, Seymour H.; and Armstrong, Jack W., 3,710,922.
Arn Jung Lockomotivfabrik GmbH: *See—*
Hof, Rainer, 3,710,660.
Arnold, James F., to Hydro Tech Services, Inc. Apparatus for pressure testing annular seals in an oversliding connector. 3,711,123, Cl. 285-18.000.
Arzberger, William A.; and La Lumiere, Edward J., to Jet Spray Cooler, Inc. Three port valve assembly having selectively actuated valves. 3,710,981, Cl. 222-129.100.
Asada, Hidekazu, to Kabushikikaisha Tokyo Keiki. Sing-around type ultrasonic measuring instrument. 3,710,621, Cl. 73-194.00a.
Asano, Kiro; Takita, Hitoshi; Toyotla, Noriyuki; Takahashi, Masaaki; and Suzuki, Shigeyuki. Process for the preparation of trans 4-aminomethylcyclohexane-1-carboxylic acid. 3,711,537, Cl. 260-514.00j.
Ashe, Benedict H., Jr.; and Fox, Homer M., to Phillips Petroleum Company. Porous electrode having open feed cavity. 3,711,396, Cl. 204-284.000.
Asikainen, Niilo Kalervo, to Oy Tampella AB. Projectile storing and transporting structure. 3,710,997, Cl. 224-25.00a.
Asikainen, Nillo Kalervo, to Oy Tampella AB. Aiming arrangement for grenade throwers. 3,710,675, Cl. 89-41.00b.
Asimor, Brian L.: *See—*
Orozco, Enrique H.; Asimor, Brian L.; and Sylvester, Edward C., 3,711,108.
Asogawa, Tatsuo; Matsumura, Yoshihiko; Satani, Eiji; Wada, Shyozo; and Funakoshi, Yoshiro, to Takeda Chemical Industries, Ltd. Preparation of proteinaceous granular seasoning. 3,711,301, Cl. 99-140.00r.
Asquith, William, Limited: *See—*
Ennis, Brian, 3,711,167.
Associated Mills, Inc.: *See—*
Hilger, Ronald O., 3,710,785.
Astrophysics Research Corporation: *See—*
Adrian, Donald J.; and Christensen, Lawrence E., 3,711,856.
Ateliers de la Motobecane: *See—*
Jaulmes, Eric, 3,711,237.
Ateliers des Charmilles, S.A.: *See—*
Girardin, Roger, 3,711,675.
Atkins, Cedric D.; Attaway, John A.; and Maraulja, Matthew D., to State of Florida, Department of Citrus. Natural orange base. 3,711,294, Cl. 99-79.000.
Atomic Energy of Canada Limited: *See—*
Parry, Colin; and Round, Kenneth J., 3,711,326.
Attaway, John A.: *See—*
Atkins, Cedric D.; Attaway, John A.; and Maraulja, Matthew D., 3,711,294.
Atwood Vacuum Machine Company: *See—*
Marx, Thomas O., 3,711,057.
Audesse, Emery G.: *See—*
Westlund, Arnold E., Jr.; and Audesse, Emery G., 3,711,700.
Audiffred, Sidney J.; and Steury, Howard C., to Caterpillar Tractor Company. Oil Film bearing for converter element. 3,710,570, Cl. 60-54.000.
Aumuller, Walter: *See—*
Hubner, Manfred; Heerdt, Ruth; Schmidt, Felix Helmut; Stach, Kurt; and Aumuller, Walter, 3,711,564.
Auscoteng Pty. Ltd.: *See—*
Foley, Norman Leslie, 3,711,228.
Austgen, Kenneth J.; Corbett, Richard A.; and Schuller, James J., to Pullman Incorporated. Vehicle hopper door operating mechanism. 3,710,730, Cl. 105-250.000.
Auto Safety, Inc.: *See—*
Reid, Ronald E., 3,710,407.
Automatic Tube Co.: *See—*
Van Otteren, Wilbur M., 3,711,038.
Automobiles Peugeot: *See—*
Peltier, Henri; Bailly, Roger; and Chatourel, Pierre, 3,710,848.
Piret, Jean, 3,710,650.
Avco Corporation: *See—*
McClure, John W., 3,710,619.
Perrero, George; and Weller, Carroll E., 3,711,782.
Aya, Masahiro: *See—*

Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, 3,711,582.

Aycock, Thomas W.; and Wright, John J., to International Business Machines Corporation. Electrical resistor paste containing a small amount of charcoal. 3,711,428, Cl. 252-502.000.

Ayres, Charles A., to Phillips Petroleum Company. Fluid transfer control system. 3,711,457, Cl. 260-93.700.

Ayres, Douglas John: *See—*
Ayres, Douglas John; and Greenwood, Derek (said Greenwood assor. to said), 3,711,409.

Ayres, Douglas John; and Greenwood, Derek, said Greenwood assor. to said Ayres, Douglas John. Ice-preventive and de-icing oil-in-water emulsion. 3,711,409, Cl. 252-70.000.

Babcock & Wilcox Company, The: *See—*
Clark, Merle Myron, 3,711,239.

Babcock, Dale F.; and Neill, John S., to United States of America, Atomic Energy Commission. Increased recovery in dual temperature isotope exchange process. 3,711,598, Cl. 423-580.000.

Babcock, John C.: *See—*
Beal, Philip F., III; Lincoln, Frank H., Jr.; and Babcock, John C., 3,711,528.

Babunovic, Momir, to Barry-Wehmiller Company. Container feeding apparatus for washers. 3,710,918, Cl. 198-30.000.

Bacevius, Joseph G., to Garrity, Paul G. Flashlight construction. 3,711,699, Cl. 240-10.680.

Bacevius, Joseph G., to Garrity, Paul G. Flashlight construction. 3,711,703, Cl. 240-10.600.

Badachhape, Ramachandra B.: *See—*
Margave, John L.; Bautista, Renato G.; Ficalora, Peter J.; and Badachhape, Ramachandra B., 3,711,595.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Adolphi, Heinrich; Eilingsfeld, Heinz; and Patsch, Manfred, 3,711,494.
Goetze, Walter; Kasper, Werner; Klatt, Gerhard; and Schulz, Gerhard, 3,710,439.
Merger, Franz, 3,711,469.
Nonnenmacher, Helmut; Krabetz, Richard; Engelbach, Heinz; and Zinke-Allmang, Helmut, 3,711,540.
Osieka, Hans; Koenig, Karl-Heinz; and Pommer, Ernst-Heinrich, 3,711,614.
Rohr, Wolfgang; Fischer, Adolf; and Zschocke, Albrecht, 3,711,492.

Baer, Wolfgang; and Fork, Werner, to Voith, J. M., GmbH. Steering device for ships. 3,710,748, Cl. 114-151.000.

Baglai, Vitaly Mikhailovich: *See—*
Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Dubinsky, Rudolf Solomonovich; Latash, Jury Vadimovich; Emelyanenko, July Georgievich; and Baglai, Vitaly Mikhailovich, 3,711,616.

Bailly, Roger: *See—*
Peltier, Henri; Bailly, Roger; and Chatourel, Pierre, 3,710,848.

Baker, Charles H.; and Scherer, Henry W., to S & C Electric Company. Open type fuse. 3,711,809, Cl. 337-190.000.

Baker, Don R., to Stauffer Chemical Company. Method for controlling algae. 3,711,271, Cl. 71-67.000.

Baker, Don R., to Stauffer Chemical Company. Method of controlling bacteria with trichloroacrylonitrile. 3,711,603, Cl. 424-304.000.

Baker, Stuart J.: *See—*
Huffman, Russell B.; Baker, Stuart J.; Grosslight, Donald P.; and Pace, Aldren M., 3,711,750.

Ball Corporation: *See—*
Cook, Charles W., 3,710,937.

Ballard, Jules. Method for forming wedge shaped edge. 3,711,362, Cl. 156-219.000.

Bandel, Kurt; Bartle, Walter; Gunther, Ewald; Honegg, Adolf; and Stahl, Heinz, to Daimler-Benz Aktiengesellschaft. Cushioned seat, especially motor vehicle seat with quilting. 3,711,155, Cl. 297-456.000.

Bansbich, Paul L., to Petrolite Corporation. Apparatus and process for adding chemicals. 3,710,867, Cl. 166-244.00c.

Barbier, Pierre Emile. System for recording and presenting audio information to occupants or a vehicle. 3,711,653, Cl. 179-100.10c.

Barhydt, Hamilton; and Howe, Spencer D. Automatic missile guidance system. 3,711,046, Cl. 244-3.120.

Barratt, Robert O.; and Connell, John M., to Foster Wheeler Corporation. Protected pressure release valve. 3,710,556, Cl. 55-210.000.

Barrows, Guy G. Electric signal for fishing. 3,711,847, Cl. 340-279.000.

Barry, Robert Lionel. Electric outlet box mounting. 3,710,972, Cl. 220-3.600.

Barry-Wehmiller Company: *See—*
Babunovic, Momir, 3,710,918.

Bart, Seymour H.: *See—*
Lanphere, Gerald B.; Bart, Seymour H.; and Armstrong, Jack W., 3,710,922.

Bartalini, Gastone; Brischetto, Nedo; and Giuggioli, Mario, to Societa Rhodiatoce S.p.A. Process for oxidizing cycloaliphatic hydrocarbons in the liquid phase and relevant apparatus. 3,711,557, Cl. 260-617.00h.

Bartenbach, Louis: *See—*
Leidy, Harold T.; Kerrigan, Charles M.; Tewey, Robert T.; and Bartenbach, Louis, 3,711,291.

Bartle, Walter: *See—*
Bandel, Kurt; Bartle, Walter; Gunther, Ewald; Honegg, Adolf; and Stahl, Heinz, 3,711,155.

Bartlett, Lawrence D. Spray nozzle. 3,711,029, Cl. 239-394.000.

Bassot, Jacques; and Monpetit, Louis, to Societe des Procedes Modernes d'Injection Sopromi. High speed fuel injection system. 3,710,763, Cl. 123-32.0ea.

Bastacky, Simon. Lead gel storage battery. 3,711,332, Cl. 136-26.000.

Batcher, Kenneth E., to Goodyear Aerospace Corporation. Determination of number of ones in a data field by addition. 3,711,692, Cl. 235-175.000.

Battelle Development Corporation, The: *See—*
Mobley, Carroll E.; and Maringer, Robert E., 3,710,842.

Bauer, Adolf: *See—*
Weber, Karl Heinz; Bauer, Adolf; Danneberg, Peter; and Minck, Klaus, 3,711,467.

Bauer, Adolf; Weber, Karl Heinz; Danneberg, Peter; and Minck, Klaus, to Boehringer Ingelheim G.m.b.H. 3,3-Dihydroxy-5-aryl-1H-1,5-benzodiazepine-2, 4-(3H,5H)-diones and their anhydrous 2,3,4-trione form. 3,711,468, Cl. 260-239.30b.

Bauer, Klaus; Naumann, Fritz; and Schobbe, Hermann, to Daimler-Benz Aktiengesellschaft. Control valve, especially for level control valve for hydropneumatic vehicle spring systems. 3,710,688, Cl. 91-375.00r.

Baum, Frank M., to First National Bank of Chicago, The. Dispenser for providing warm lather for shaving. 3,710,985, Cl. 222-146.0ha.

Baumann, Hans G., to Demag Aktiengesellschaft. Method for casting and rolling of metal stands from the casting heat. 3,710,841, Cl. 164-76.000.

Baumann, Willy: *See—*
Gramiger, Adrian; and Baumann, Willy, 3,710,493.

Baumer, Wilhelm: *See—*
Engelhardt, Manfred; Fruhstorfer, Wolfgang; Hesse, Reiner; Dennler, Bernd; and Baumer, Wilhelm, 3,711,554.

Bautista, Renato G.: *See—*
Margave, John L.; Bautista, Renato G.; Ficalora, Peter J.; and Badachhape, Ramachandra B., 3,711,595.

Baxter, Carlton D., to Eastman Kodak Company. Microfiche viewing device. 3,710,488, Cl. 40-63.00a.

Bayer, Horst O.; and Nulty, Patrick J., to Rohm & Haas Company. Process for preparing N-aryl pyrid-2-ones. 3,711,488, Cl. 260-295.50r.

Beal, Philip F., III; Lincoln, Frank H., Jr.; and Babcock, John C., to Upjohn Company, The. Racemic dihydro-PGE$_1$ and related compounds. 3,711,528, Cl. 260-468.00a.

Beatrice Foods Co.: *See—*
La Warre, Robert W., Sr., 3,711,296.
Luksas, Anthony J.; and Williams, Wilmore, 3,711,303.

Beatrice Foods Company: *See—*
Gore, William C.; and Shapiro, Eugene B., 3,710,591.

Becker, James H.: *See—*
Wysocki, Joseph J.; Adams, James E.; and Becker, James H., 3,711,713.

Beer, Henri Bernard, to Chenmor Corporation. Electrode having platinum metal oxide coating thereon, and method of use thereof. 3,711,385, Cl. 204-59.000.

Begley, Thomas J.: *See—*
Liversidge, Thomas K.; and Begley, Thomas J., 3,710,455.

Begley, Thomas J., to Reed Toys Incorporated. Individual air jets to impell balls toward a target. 3,711,097, Cl. 273-101.000.

Begotti, Pino: *See—*
Pinfari, Italo; and Begotti, Pino, 3,710,725.

Beishir, Richard Bert, to ACF Industries Incorporated. Electronic fuel injection system. 3,710,766, Cl. 123-32.0ea.

Bell, John R.: *See—*
Korchynsky, Michael; Bell, John R.; and Cover, Richard J., 3,711,340.

Bell Telephone Laboratories, Incorporated: *See—*
Copeland, John Alexander, III, 3,711,840.
Geusic, Joseph Edward; and Van Uitert, Le Grand Gerard, 3,711,841.
Show, Woo Foung, 3,711,842.

Bendix Corporation, The: *See—*
Eckenfelder, Robert Charles; Kautz, Robert Frederick; and Compoly, Albert William, 3,711,762.
Houseman, Paul S., 3,711,827.

Bendix-Westinghouse Automotive Air Brake Company: *See—*
Valentine, Harry M., 3,710,692.

Benedic, Siegfried: *See—*
Imelmann, Wilfried; and Benedic, Siegfried, 3,711,217.

Bennett, William G., to Teleflex, Inc. Remote control assembly. 3,710,645, Cl. 74-501.00p.

Bennington, C. Earl, to Voplex Corporation. Workpiece transfer apparatus. 3,711,680, Cl. 219-243.000.

Benoit, Roland A.; and Tripodi, Joseph R., to Royal Metal Corporation. Console control for beds with interlocking switch operators. 3,711,664, Cl. 200-5.00r.

Benson, Gustav E.; and Potter, Douglas E., to Owens-Corning Fiberglas Corporation. Method and apparatus for intermittently texturing yarn. 3,710,461, Cl. 28-1.400.

Benson, Harry J., mesne: *See—*
Williams, Will B., 3,711,256.

Bentos Products Limited: *See—*
Cramp, Benjamin; and Bowen-Edwards, Thomas, 3,711,096.

Berbeco, George R.: *See—*
Hook, Edwin O.; Berbeco, George R.; and Obermayer, Arthur S., 3,711,542.

Beretta, Alessandro. Tape misfeeding protected recorder-reproducer. 3,711,004, Cl. 226-181.000.

Berger & Gorin, Inc.: *See—*
Yonkers, George Smilow; and Kayen, Samuel L., 3,710,996.

Bergmeyer, Hans Ulrich: *See—*
Jaworek, Dieter; Gruber, Wolfgang; and Bergmeyer, Hans Ulrich, 3,711,574.

Berman, Dennis W.; and Gergoe, Bela, to General Motors Corporation. Vehicle body door hinge hold-open clip. 3,710,417, Cl. 16-142.000.

Berman, Elliot; and Ekman, Carl F. W., to Itek Corporation. Data storage systems. 3,711,282, Cl. 96-29.00r.

Bernardo, Edward T.; Cherochak, Joseph G.; and Sipel, Richard G., to International Business Machines Corporation. Component insertion apparatus. 3,710,479, Cl. 29-203.00b.

Berstorff, Hermann, Maschinenbau G.m.b.H.: *See—*
Reschke, Reinhold, 3,711,348.

Besel, Fred A.; and Setzer, William C., to Olin Corporation. Aluminum alloy conductor. 3,711,339, Cl. 148-32.500.

Bessho, Michio, to Kawasaki Yuko Kabushiki Kaisha. Injection molding machine for thermo-setting plastics. 3,710,987, Cl. 222-386.000.

Betzler, Mark H., to Air Products and Chemicals, Inc. Ferruleless barbed tubing connector. 3,711,130, Cl. 285-239.000.

Beymer, Glen E. Mobile metal forming machine for siding. 3,710,607, Cl. 72-30.000.

Bhuta, Pravin G.: *See—*
Johnson, Robert L.; Overoye, Kenneth R.; and Bhuta, Pravin G., 3,710,615.

Bielawski, Joseph J., to Western Electric Company, Incorporated. Method of encasing a toroidally shaped object with a heat shrinkable covering. 3,710,531, Cl. 53-13.000.

Bienenfeld, Myron, to Magic Mold, Inc. Support garment. 3,710,801, Cl. 128-547.000.

Bienert, Klaus; Lang, Winfried; and Weidner, Herbert, to Wacker-Chemitronic Gesellschaft fur Elektronik Grundstoffe m.b.H. Process for making boron nitride bodies. 3,711,594, Cl. 423-290.000.

Biletsky, Semen Mikhailovich: *See—*
Raevsky, Georgy Vladimirovich; Biletsky, Semen Mikhailovich; and Burmenko, Eduard Jurievich, 3,711,075.

Bio-Technical Resources, Inc.: *See—*
Sfat, Michael R.; and Morton, Bruce J., 3,711,292.

Biomarine Industries, Inc.: *See—*
Parker, Frederick A.; and Soult, Charles J., 3,710,553.
Plank, Robert E.; and Rutkowski, Michael D., 3,711,395.

Biondi, Phyllis R.; and Kelso, Jery M. Beach locker. 3,710,736, Cl. 109-50.000.

Birchall, Thomas D.; and Powell, Johnnie L., to Mandrel Industries, Inc. Processing apparatus for objects. 3,710,753, Cl. 118-2.000.

Bird Island, Inc.: *See—*
Moncrieff, Alexander D. F., 3,710,685.

Bird Provision Co.: *See—*
Vogel, Virgil W.; and Vogel, Paul W., 3,711,298.

Birk, James R., to North American Rockwell Corporation. Method for producing heat. 3,710,737, Cl. 110-1.500.

Bishop, Irving N.: *See—*
Hideg, Laszlo; and Bishop, Irving N., 3,711,069.

Bjalme, Bengt G.; and Buhl, Robert E., to Reed Manufacturing Company. Plastic pipe flaring tool. 3,710,428, Cl. 29-237.000.

Black, Gordon L.: *See—*
O'Conner, James F.; and Black, Gordon L., 3,711,587.

Black, Howard; and Breier, Morton A., to Dorr-Oliver Incorporated. Conveying apparatus. 3,710,917, Cl. 198-20.00r.

Blackwell, James C., to Bymco Corporation. Self-propelled tiling machine. 3,710,583, Cl. 61-72.100.

Blair, Benton, 1/10 to Blair, Farnham. Float for spectacles. 3,711,190, Cl. 351-43.000.

Blair, Farnham: *See—*
Blair, Benton, 3,711,190.

Blake, Dale G.: *See—*
Rich, Leonard G.; and Blake, Dale G., 3,711,717.

Blanc, Remy; Chapuis, Alain; and Gagne, Pierre, to Soltex. Installation for treatment of textile materials. 3,710,601, Cl. 68-18.00c.

Bleier, Paul Gottfried, to Samum Vereinigte Papier-Industrie K.G. Printable paper material and method of making. 3,711,317, Cl. 117-76.00p.

Bliss & Laughlin Industries, Incorporated: *See—*
Hippach, Wilburn L., 3,710,893.

Bliss, Woodrow E., Jr.: *See—*
Hills, Richard E.; Adams, John H.; Anderson, Lloyd E., Jr.; Bliss, Woodrow E., Jr.; Hamren, Fred W., Jr.; Honath, Harry F.; and Murphy, John C., 3,710,582.

Bloch, Paul, to La Telephonie Industrielle et Commercial Telic. Miniature electromagnetic relay. 3,711,801, Cl. 335-196.000.

Blom & Maters Machinefabriek N.V.: *See—*
Maters, Jan, 3,710,919.

Blomgren, Oscar C., Jr.: *See—*
Blomgren, Oscar C., Sr.; and Blomgren, Oscar C., Jr., 3,710,837.

Blomgren, Oscar C., Sr.; and Blomgren, Oscar C., Jr., to Tuxco Corporation. Tire constrictor. 3,710,837, Cl. 157-1.210.

Blomley, Peter F., to Plessey Company Limited, The. Electrical amplifier arrangements. 3,711,781, Cl. 330-15.000.

Bloom, Delwin W., to Honeywell Information Systems, Inc. Source code comparator computer program. 3,711,863, Cl. 444-1.000.

Bloomfield, Jack, to British Railways Board. Support systems for the seated human body. 3,711,156, Cl. 297-457.000.

Blumenthal, Jack L.; Carroll, David F.; and Ogren, John R., to United States of America, Atomic Energy Commission. Plasma arc sprayed modified alumina high emittance coatings for noble metals. 3,711,327, Cl. 117-227.000.

Blumenthal, John: *See—*
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Bobear, William J.: *See—*
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Bobst, J., & Fils, S. A.: *See—*
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Bochard, Camille, to Robatel S.L.P.I. Container for radioactive materials having a heat releasable outer panel wall. 3,711,715, Cl. 250-108.0ws.

Bodenseewerk Perkin-Elmer & Co., GmbH: *See—*
Otte, Eginhard; Schwenger, Gisela; and Schwenkel, Willi, 3,710,626.

Bodine, Albert G. Sonic de-linting of seeds of the like from fibrous host material. 3,710,932, Cl. 209-1.000.

Boehm, Walter G.; and Torrance, Gordon A., to Webb, Jervis B., Company. System for forming and handling annular rod bundles. 3,710,711, Cl. 100-7.000.

Boehringer Ingelheim G.m.b.H.: *See—*
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James, Varnell L., 3,711,039.
True, Harold C.; and Fitzsimmons, Richard D., 3,710,890.

Bofferding, Richard H.; Mead, Frederick C.; and Hendershot, Richard L., to Zero Cold, Inc. Shelving system. 3,710,734, Cl. 108-108.000.

Bogan, David B., to Bogan, David B., Corporation. Gear housing. 3,710,646, Cl. 74-609.000.

Bogan, David B., Corporation: *See—*
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Boggs, Charles L.: *See—*
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Bohler, Walter, to Perkin-Elmer Corporation, The. Automatic gain calibration. 3,711,774, Cl. 324-115.000.

Bolash, Philip: *See—*
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Bolasny, Robert E., to Research Corporation. Method and apparatus for generating ions and controlling electrostatic potentials. 3,711,743, Cl. 317-3.000.

Bollag, Werner; Gutmann, Hugo; Hegedus, Balthasar; Kaiser, Ado; Langemann, Albert; Muller, Marcel; and Zeller, Paul, to Hoffmann-La Roche Inc. Certain benzylhydrazino derivatives of lower-alkyl substituted ureas. 3,711,543, Cl. 260-553.00a.

Bomstein, Jacques, to Etablissements J. Berthelat et Fils. Transfer device. 3,710,961, Cl. 214-38.000.

Booher, Harold R., to Goodyear Tire & Rubber Company, The. Automatic braking system. 3,711,163, Cl. 303-21.00p.

Booth, Gary E.: *See—*
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Boren, Donald F.: *See—*
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Borg-Warner Corporation: *See—*
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Ward, Donald H., 3,711,658.
Wayman, Robert W.; and Wiemer, Howard C., 3,710,602.

Borkowski, Casimer; and Rochelle, James M., to United States of America, Atomic Energy Commission. Alarm radiation dosimeter with improved integrating pulse ionization chamber and high voltage supply. 3,711,705, Cl. 250-83.600.

Bornor, Brian J.; and Macgregor, Douglas J. H., to Timex Corporation. Spring bar assembly. 3,710,458, Cl. 24-265.00b.

Borom, Marcus P.; and Johnson, Lyman A., to General Electric Company. Miniaturized automatic decompression meters. 3,710,625, Cl. 73-432.00r.

Bosch, Robert, G.m.b.H.: *See—*
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Nier, Johannes, 3,711,752.

Bourgeois, Norbert, to Etudes et Bonneterie S.A. Device for the selection of the needles or knitting accessories of circular knitting machines. 3,710,594, Cl. 66-50.00r.

Bowen-Edwards, Thomas: *See—*
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Box, Jones, and Label Co., Limited: *See—*
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Boyd, Charles L.: *See—*
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Boyd, Charles L.; and Roach, James D., to Halliburton Company. Magnetic pickup element adapter for flowmeters. 3,710,623, Cl. 73-231.00r.

Boyer, Marce-Louis; and Landwerlin, Michel, to Compagnie Industrielle des Telecommunication Cit-Alcatel. Capstan drive arrangement for high-speed intermittent tape drive. 3,711,003, Cl. 226-177.000.

Boyer, Marcel-Louis, to C.I.T.-Compagnie Industrielle des Telecommunications. Circuit for interconnection of telephone and radiotelephone networks. 3,711,647, Cl. 179-2.00e.

Boyer, Ronald G.; and Fouts, Drexel R., to Caterpillar Tractor Company. Brake and transmission shift locks with single control lever. 3,710,904, Cl. 192-4.00a.

Boyle, George E., to Corlite Corporation. Apparatus for displaying colored light patterns. 3,711,697, Cl. 240-10.000.

Bracey, Jep T. Live bait bucket with water oxygenating means. 3,710,502, Cl. 43-56.000.

Brack, Karl, to Hercules Incorporated. Cross-linkable polymer compositions comprising ethylenically unsaturated polymer. 3,711,446, Cl. 260-77.5ac.

Brake, Loren D., to Du Pont de Nemours, E. I., and Company. Isomerization of 4,4'-methylenedi(cyclohexylamine) over moderated ruthenium catalyst. 3,711,550, Cl. 260-563.00b.

Brand, Dieter; and Esselborn, Reiner, to Merck Patent Gesellschaft mit beschrankter Haftung. Colored nacreous pigments. 3,711,308, Cl. 106-291.000.

Brand, Warren L.; and Kashkooli, Faraj Y., to Signetics Corporation. Enhancement mode N-channel MOS structure and method. 3,711,753, Cl. 317-235.00r.

Brandeau, Edward Peter; Chaffee, Quentin Roosevelt; and Gitt, Robert Lewis, to AMP Incorporated. Testing of phosphor bronzes. 3,710,620, Cl. 73-159.000.

Brandestini, Antonio. Method for stressing and anchoring wires of a bundle of tensioning wires. 3,710,433, Cl. 29-452.000.

Brandle, Marvin M. Battering apparatus for opening jammed automobile doors. 3,710,655, Cl. 81-52.350.

Braun, John: *See—*
Tatum, Howard J.; Jernberg, Nils A.; and Braun, John, 3,711,035.

Braunhut, Harold N. Optical toy device for simulating stereoscopic X-ray images. 3,711,183, Cl. 350-162.00r.

Bream, John B.; Picard, Claude Wolfgang; and Read, David Michael, to Wander, A., Dr., Ltd., a/k/a Wander, A., Dr., AG. 2-(2-Imidazolin-2-ylthio)-acetanilides. 3,711,505, Cl. 260-309.600.

Bredemeier, Herbert C., to American Optical Corporation. Laser system for microsurgery. 3,710,798, Cl. 128-303.100.

Breier, Morton A.: *See—*
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Breitenbach, Richard C.; Edstrom, Gene H.; and Keffeler, James R., to International Business Machines Corporation. Peripheral device analysis. 3,711,691, Cl. 235-153.00a.

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Bremseth, Gerald B. Loudspeaker voice coils. 3,711,659, Cl. 179-115.5vc.

Brendley, William H., Jr., to Rohn & Haas Company. Interpolymers of sulfoalkylene acrylates. 3,711,449, Cl. 260-79.3mu.

Brennan, James, Jr.; Pope, Hermon L., Jr.; and Boren, Donald F., to Texas Instruments, Incorporated. Electronic printing input-output station. 3,710,913, Cl. 197-82.000.

Breslow, Jeffrey D.; Meyer, Burton C.; and Glass, Marvin I., to Glass, Marvin, & Associates. Board game apparatus. 3,711,101, Cl. 273-131.0ad.

Brett, John J.: *See—*
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Bretti, Franco; and Nuccio, Giuseppe, to Olivetti, Ing., C., & C., S.p.A. High speed serial printing device for typewriters, teleprinters, calculating machines, accounting machines and the like. 3,710,912, Cl. 197-49.000.

Brill-Edwards, Harry, to Chromalloy American Corporation. Sacrificial corrosion-resistant diffusion coatings. 3,711,315, Cl. 117-71.00m.

Brint, Norman Trevor, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the. Extractor mechanisms for guns. 3,710,684, Cl. 89-167.000.

Briot, Paul-Marie Henri, to Groupement Atomique Alsacienne Atlantique G.A.A.A. Grab for fuel elements of a nuclear reactor. 3,711,144, Cl. 294-86.00a.

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Bronstein, Herman. Apparatus for connecting pipe. 3,710,475, Cl. 29-200.00p.

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Brown, Arling Dix; and Blumenthal, John, to Gould Inc., mesne. Electrographic record system having a self spacing medium. 3,711,859, Cl. 346-74.0es.

Brown, Bruce J. Digital fundamental PRP analyzer for pulse train signals. 3,711,772, Cl. 324-78.00d.

Brown, Gordon R.; and Michalek, Margaret E., said Brown assor. to All-Power Manufacturing Co. Bowl assembly for chilling salads or the like. 3,710,589, Cl. 62-457.000.

Brown, Hugh E.; Fricke, Vourdon H.; and Gerfen, Henry C., to Fuel-time Saver Corporation. Reserve fuel system for liquefied gas powered engines. 3,710,809, Cl. 137-1.000.

Brown, John Vincent. Drilling bolt holes. 3,711,215, Cl. 408-108.000.

Brown, Robley C. Vehicle engine mounting. 3,710,885, Cl. 180-64.00m.

Brown, Ronald C.: *See—*
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Brunner, Rudolf. Single-joint front jaw of a safety binding for skis having vertically adjustable hold-down arms. 3,711,107, Cl. 280-11.35t.

Bruno, Frederick H.; Camp, Raymond J.; and Farrell, Thomas H., to Eastman Kodak Company. Web transport apparatus. 3,710,703, Cl. 95-94.00r.

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Buchel, Karl Heinz; Grewe, Ferdinand; Scheinpflug, Hans; Kaspers, Helmut; and Regel, Erik, to Farbenfabriken Bayer Aktiengesellschaft. N-trityl-imidazolium salt. 3,711,502, Cl. 260-309.000.

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Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, to Farbenfabriken Bayer Aktiengesellschaft. N-trityl-imidazoles. 3,711,498, Cl. 260-309.000.

Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, to Farbenfabriken Bayer Aktiengesellschaft. N-trityl-imidazoles. 3,711,499, Cl. 260-309.000.

Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, to Farbenfabriken Bayer Aktiengesellschaft. N-trityl-imidazoles. 3,711,500, Cl. 260-309.000.

Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, to Farbenfabriken Bayer Aktiengesellschaft. N-trityl-imidazoles. 3,711,501, Cl. 260-309.000.

Buchholz, Hugh L.; and Hays, Jerry L. Cableway. 3,710,726, Cl. 104-112.000.

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Stout, Thomas M.; Smith, Edward J.; and Hiestand, John H., 3,711,688.

Bunnell, Raymond Howard; and Guerin, Frank, to Hoffmann-La Roche Inc. Method of ultrasonic coupling. 3,710,779, Cl. 128-2.00v.
Bunte, William S.; and DeGasperis, Lino E., to Egan Machinery Company. Extrusion die deckle means. 3,711,235, Cl. 425-466.000.
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Caballero, Carlos Ramos. Nose dilator. 3,710,799, Cl. 128-342.000.
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Chambost, Aime: *See—*
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Chambost, Pierre; and Chambost, Aime. Apparatus for filling a sausage skin with sliced sausage filling. 3,710,542, Cl. 53-123.000.

Champion International Corporation: *See—*
Hopping, William J., 3,710,760.

Chapuis, Alain: *See—*
Blanc, Remy; Chapuis, Alain; and Gagne, Pierre, 3,710,601.

Charhut, Frank J., to Chicago-Allis Mfg. Corporation. Shaft seal for use in washing machines. 3,710,947, Cl. 210-380.000.

Charlich, Nicholas: *See—*
Weidner, Urban A.; and Charlich, Nicholas, 3,710,403.

Chasek, Norman E., to International Microwave Corporation. Process and apparatus for fire fighting by detecting and locating hidden burning material and hot embers behind walls, partitions, and the like. 3,711,845, Cl. 340-227.000.

Chatourel, Pierre: *See—*
Peltier, Henri; Bailly, Roger; and Chatourel, Pierre, 3,710,848.

Chaumont, Guy-Noel, to Poly-Traction Inc. Snowmobile slide rail suspension. 3,711,164, Cl. 305-24.000.

Chemische Werke Huls Aktiengesellschaft: *See—*
Wieland, Alfred; and Schroeder, Georg, 3,711,437.

Chenmor Corporation: *See—*
Beer, Henri Bernard, 3,711,385.

Chercass, William. Method and apparatus for producing shirt cuffs and the like. 3,710,742, Cl. 112-121.270.

Cherochak, Joseph G.: *See—*
Bernardo, Edward T.; Cherochak, Joseph G.; and Sipel, Richard G., 3,710,479.

Cherry, Edward Moore, to Monash University. Hybrid networks. 3,711,660, Cl. 179-170.0nc.

Cherry Electrical Products Corporation: *See—*
Castle, Raymond G., 3,711,685.
Habecker, John W., 3,711,799.

Cherry, Nancy Rey; and Shackelford, Judith Ann, to Inflat-A-Industries, Inc. Inflatable mannequin structure enchancing realistic body simulation. 3,710,994, Cl. 223-67.000.

Cherry, Raymond I., to Del Mar Engineering Laboratories. Drive and control system for diagnositc and therapeutic exercise treadmill. 3,711,812, Cl. 338-200.000.

Chess, Samuel; and Porter, Lawrence C., to Upjohn Company, The. Urethane tunnel mold. 3,711,231, Cl. 425-127.000.

Chester, Milton L.; and Sanders, Billy J., to Phillips Petroleum Company. Conduit heating apparatus. 3,711,682, Cl. 219-535.000.

Chevron Research Company: *See—*
Hutchison, Stanley O., 3,710,954.
Kohn, Gustave K., 3,711,536.
Lowe, Warren, 3,711,406.

Chevron Research Corpmpany: *See—*
Kokzina, John W.; Moore, Joseph F.; and Kohn, Gustave K., 3,711,530.

Chicago Etching Corporation: *See—*
Anderson, Vincent, 3,710,489.

Chicago Switch Inc.: *See—*
Farrell, Guy M., 3,711,667.

Chicago-Allis Mfg. Corporation: *See—*
Charhut, Frank J., 3,710,947.

Chow, Weichien: *See—*
Alessio, Sergio A.; and Chow, Weichien, 3,710,441.

Christensen, Lawrence E.: *See—*
Adrian, Donald J.; and Christensen, Lawrence E., 3,711,856.

Christensen, Vernon E. Ground hole forming machine. 3,710,876, Cl. 173-43.000.

Christenson, Per Tyke, to Kamyr Aktiebolag. Screening device in cellulose digesters. 3,711,367, Cl. 162-251.000.

Christy, Marcia E., to Merck & Co., Inc. Chemical compounds and methods of preparing the same. 3,711,518, Cl. 260-340.500.

Chromalloy American Corporation: *See—*
Brill-Edwards, Harry, 3,711,315.

Chu, Bing C.; Fischer, David J.; and Kunz, Hans J., to Corning Glass Works. Continuous processing furnace and method of using the same. 3,711,073, Cl. 263-3.000.

Chu, Edward; and Harper, Lee R., to Du Pont de Nemours, E. I., and Company. Self-priming polyurethane compositions. 3,711,445, Cl. 260-77.5am.

Ciba Geigy AG: *See—*
Hegar, Gert, 3,711,459.

Ciba-Geigy AG: *See—*
Abbondio, Antonio, 3,711,208.
Ehrat, Kurt, 3,711,645.
Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,711,472.

Ciba-Geigy Corporation: *See—*
Doebel, Karl J.; and Francis, John E., 3,711,473.
Gruenfeld, Norbert, 3,711,612.
Heusler, Karl; and Woodward, Robert Burns, 3,711,464.
Jeger, Oskar; and Wehrli, Ueli, 3,711,511.
Lehmann, Claude; and Renk, ERnest, 3,711,609.
Ostermayer, Franz; and Renner, Ulrich, 3,711,507.
Petersen, John Valdemar Brammer; and Clauson-Kaas, Niels, 3,711,490.

Cillick, Herman. Door latching apparatus. 3,710,604, Cl. 70-141.000.

Cimbollek, Gerhard: *See—*
Klaus, Irmscher; Cimbollek, Gerhard; Orth, Dieter; Nowak, Herbert; and Freisberg, Karl-Otto, 3,711,478.

Cincinnati Milacron Inc.: *See—*
Witzel, John R., 3,711,676.

Cinquegrani, Vincent J. Fuel injection apparatus in an internal combustion engine. 3,710,771, Cl. 123-139.0aw.

C.I.T.-Compagnie Industrielle des Telecommunications: *See—*
Boyer, Marcel-Louis, 3,711,647.

Cities Service Company: *See—*
Harris, Dale K.; and Soulier, Louis R., 3,710,559.

Clampitt, Bert H.: *See—*
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Clapp, Malcolm: *See—*
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Clark Equipment Company: *See—*
Fisher, John F.; and Zeller, Burton S., 3,710,637.

Clark, George M.: *See—*
Kimmel, J. D.; and Clark, George M., 3,710,448.

Clark, Harlan C., to United States of America, Army, mesne. Ammunition link. 3,710,680, Cl. 89-35.00a.

Clark, Merle Myron, to Babcock & Wilcox Company, The. Fuel burner. 3,711,239, Cl. 431-188.000.

Clarke, Peter J. Sputtering apparatus. 3,711,398, Cl. 204-298.000.

Clauson-Kaas, Niels: *See—*
Petersen, John Valdemar Brammer; and Clauson-Kaas, Niels, 3,711,490.

Claycomb, Jackson R., to Schlumberger Technology Corporation. Data-signaling apparatus for well drilling tool. 3,711,825, Cl. 340-18.0ld.

Cleusix, Willy, to OMEGA Louis Brandt & Frere S.A. Calendar watch with isolated hour hand changing means combined with synchronization gearing. 3,710,567, Cl. 58-58.000.

Clevenger, James T.; and Stohler, John L., to Sperry Rand Corporation. Bucket level indicator. 3,710,968, Cl. 214-761.000.

Clifford, Paul R.; and Haytayan, Harry M. Impact tools. 3,711,008, Cl. 227-147.000.

Clinton, Henry H. Electrical relay. 3,711,800. Cl. 335-192.000.

Close, David E.: *See—*
Donlon, Richard H.; Close, David E.; and Loomis, Peter B., 3,710,724.

Cloutier, Alfred J. Device for use in turning operations on pipe ends and in boring holes in the slides thereof. 3,711,214, Cl. 408-92.000.

Cluett, Peabody & Co.: *See—*
McFalls, Richard J., 3,710,741.

Cobb, William R.: *See—*
Moreland, William C., II; Cobb, William R.; and Tyke, Charles R., 3,711,672.

Coester, Jean Yves: *See—*
Vautier, Philippe Jean; and Coester, Jean Yves, 3,711,786.

Coffey, Peter E., to Environment/One Corporation. Method and apparatus for mercury concentration measurement. 3,711,248, Cl. 23-230.00r.

Coffman, Gordon E. Rolling ball game apparatus. 3,711,094, Cl. 273-86.000.

Cole, Edward L.; and Hess, Howard V., to Texaco Inc. Continuous process for recovering waxes from oily sludges. 3,711,400, Cl. 210-21.000.

Cole, Howard W., Jr.: *See—*
Davidson, William M.; and Cole, Howard W., Jr., 3,710,943.

Colgate-Palmolive Company: *See—*
Hewitt, Gordon Trent, 3,711,414.

Collin, Herbert S. Clothes hanger and clamps therefor. 3,710,993, Cl. 223-9.000.

Collins, David J.: *See—*
Hostynek, Juraj J.; and Collins, David J., 3,710,939.

Collins, Joseph C.: *See—*
Rosi, David; Collins, Joseph C.; and Miller, Theodore C., 3,711,512.

Collins, Raymond W.: *See—*
Schuman, Gordon A., Jr.; Collins, Raymond W.; and Koyama, Yukinori, 3,710,708.

Colodney, Daniel; and Cordon, Martin, to Colgate-Palmolive Company. Fluoride containing transparent dentifrice. 3,711,604, Cl. 424-52.000.

Colgate-Palmolive Company: *See—*
Colodney, Daniel; and Cordon, Martin, 3,711,604.

Columbia Broadcasting System, Inc.: *See—*
Evans, Chauncey R., 3,711,617.

Cominco Ltd.: *See—*
McGowan, John; Kirby, Charles Raymond; and Cormode, Henry Daniel Alexander, 3,711,254.

Commercial Affiliates, Inc.: *See—*
Snyder, John M.; and O'Neill, James J., 3,711,349.

Commonwealth Scientific and Industrial Research Organization: *See—*
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Communications Satellite Corporation: *See—*
Schmidt, William G.; and Shimasaki, Nobuhiko, 3,711,855.

Compagnie Generale de Radiologie: *See—*
Gabray, Emile, 3,711,736.

Compagnie Industrielle des Telecommunication Cit-Alcatel: *See—*
Boyer, Marce-Louis; and Landwerlin, Michel, 3,711,003.

Compagnie Industrielle des Telecommunications: *See—*
Lubrano, Claude, 3,711,829.

Compoly, Albert William: *See—*

Eckenfelder, Robert Charles; Kautz, Robert Frederick; and Compoly, Albert William, 3,711,762.
Compugraphic Corporation: *See—*
Hanson, Ellis P.; and Sausele, George J. H., 3,710,707.
Compuline Corporation: *See—*
Jones, John Paul, Jr., 3,711,751.
Conant, Robert K.; and Finke, William H., to International Business Machines Corporation. Optical exposure head. 3,710,702, Cl. 95-12.000.
Concast AG: *See—*
Burkhardt, Max; and Thalmann, Armin, 3,710,845.
Connell, John M.: *See—*
Barratt, Robert O.; and Connell, John M., 3,710,556.
Connell, Raymond S. Polarity separation multiplex. 3,711,651, Cl. 179-15.0bt.
Conner, Jack S., to Northrop Corporation. Nutplate installation device. 3,711,006, Cl. 227-61.000.
Conroy, Natalie Elaine: *See—*
Arlt, Herbert George, Jr.; and Conroy, Natalie Elaine, 3,711,270.
Consolidated Edison Company: *See—*
Cahill, William J., Jr., 3,711,371.
Consolidated Foods Corporation: *See—*
Pinkham, Carl W., Jr., 3,711,742.
Container Corporation of America: *See—*
Walter, Richard T., 3,710,535.
Cook, Charles W., to Ball Corporation. Method and apparatus for transporting glassware. 3,710,937, Cl. 209-74.00r.
Coombs, Robert V.; and Galantay, Eugene E., to Sandoz-Wander, Inc. 17α-Hydroxy and acyloxy substituted-9α-methyl-19-norprogesterones. 3,711,521, Cl. 260-397.300.
Coon, James A.: *See—*
Coon, James A.; and Throbald, Elwin (said Theobald assor. to said), 3,710,467.
Coon, James A.; and Throbald, Elwin, said Theobald assor. to said Coon, James A. Adjustable file holding device. 3,710,467, Cl. 29-80.000.
Coon, Lucille: *See—*
Leebrick, John R., 3,711,524.
Cooper, Herbert W. Pyrolysis process. 3,711,568, Cl. 260-683.00r.
Cope, Geoffrey Wilton, to Dresser Industries, Inc. Coupler positioning device. 3,710,951, Cl. 213-15.000.
Copeland, John Alexander, III, to Bell Telephone Laboratories, Incorporated. Write circuit using enhanced propagation pulses for lateral displacement coding of patterns of single-wall magnetic domains. 3,711,840, Cl. 340-174.0tf.
Copeland, Kenneth D.: *See—*
Smith, Leland E.; Johnson, Jack B.; Burks, Kenneth N.; and Copeland, Kenneth D., 3,711,837.
Copystatics Manufacturing Corporation: *See—*
Nordine, Richard D., 3,711,198.
Corbett, Richard A.: *See—*
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Cordo, Francis Vincent, to General Electric Company. Method of assembly and bonding. 3,710,435, Cl. 29-470.500.
Cordon, Martin: *See—*
Colodney, Daniel; and Cordon, Martin, 3,711,604.
Corlite Corporation: *See—*
Boyle, George E., 3,711,697.
Cormode, Henry Daniel Alexander: *See—*
McGowan, John; Kirby, Charles Raymond; and Cormode, Henry Daniel Alexander, 3,711,254.
Cornelius, Frank L., to General Electric Company. Blood gas sensor amplifier and testing system. 3,710,778, Cl. 128-2.00b.
Cornett, Earl J.; and Cornett, Gene E. Safety device for firearms. 3,710,490, Cl. 42-1.00n.
Cornett, Gene E.: *See—*
Cornett, Earl J.; and Cornett, Gene E., 3,710,490.
Corning Glass Works: *See—*
Chu, Bing C.; Fischer, David J.; and Kunz, Hans J., 3,711,073.
Garfinkel, Harmon M., 3,711,393.
Keck, Donald B.; and Schultz, Peter C., 3,711,262.
Cosby, Algar H. Heated dispensing unit for cans of viscous substances. 3,710,978, Cl. 22-150.00a.
Cothran, Samuel Bynum; and Kirk, James Rodney, to Du Pont de Nemours, E. I., and Company. Container and method for packaging material sensitive to contaminants. 3,710,539, Cl. 53-27.000.
Couchman, James C.; and Applebay, George W., to United States of America, Atomic Energy Commission. Air sampling device. 3,710,557, Cl. 55-270.000.
Coughlin, Robert W. Process and device for purifying air. 3,710,548, Cl. 55-73.000.
Coulter, James R.: *See—*
Fulwyler, Mack J.; Steinkamp, John A.; and Coulter, James R., 3,710,933.
Cover, Richard J.: *See—*
Korchynsky, Michael; Bell, John R.; and Cover, Richard J., 3,711,340.
Cramp, Benjamin; and Bowen-Edwards, Thomas, to Bentos Products Limited. Projecting and catching apparatus and projectile for use therewith. 3,711,096, Cl. 273-96.00r.
Crawford, Burdette B. Hand truck with means for shifting center of gravity and having auxiliary roller support. 3,711,111, Cl. 280-47.220.
Creators Limited: *See—*
Kent, Cecil, 3,711,360.
Cremer, Gottfried: *See—*
Novotny, Antonin; Cremer, Gottfried; and Heimann, Ewald, 3,711,189.
Crommelynck, Francois: *See—*
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Crouse, David J.: *See—*
Hurst, Fred J.; and Crouse, David J., 3,711,591.
Crowder, William E. Surface projectile target having a central goal loop. 3,711,100, Cl. 273-127.00r.
Crowley, Norman R.; Fuchs, Gilbert N.; and Wink, Randall W., to Evans Tool & Engineering Inc. Parts transfer and storage unit. 3,710,958, Cl. 214-16.00r.
Crown Zellerbach Corporation: *See—*
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Herschler, Robert John, 3,711,606.
Cryogenic Engineering Company: *See—*
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Csejka, David A.: *See—*
Sawyer, Arthur W.; and Csejka, David A., 3,711,410.
Sawyer, Arthur W.; and Csejka, David A., 3,711,411.
Sawyer, Arthur W.; and Csejka, David A., 3,711,412.
Csontos, Alan A., to Goodrich, B. F., Company, The. Hydroxyl containing liquid mercaptan-terminated acrylate polymers. 3,711,451, Cl. 260-79.000.
Csontos, Alan A., to Goodrich, B. F., Company, The. Liquid acrylate polymers of improved vulcanizability. 3,711,452, Cl. 260-79.000.
CTA-Compagnie Industrielle de Textiles Artificiels et Synthetiques: *See—*
Morieras, Gilbert; and Sere de Lanauze, Michel, 3,711,630.
Cucinella, Salvatore; and Mazzei, Alessandro, to Snam Progetti, S.p.A. Process for the preparation of copolymers of a monoolefin and a diolefin and the products products obtained thereby. 3,711,455, Cl. 260-85.30r.
Cullen, Orville E.; and Lincoln, Joseph A. Method of heat treating steel strip. 3,711,342, Cl. 148-134.000.
Culver, Harold: *See—*
Hines, Robert R.; and Culver, Harold, 3,710,849.
Cumberland Engineering Company, Inc.: *See—*
Gotham, Stanley T., 3,711,033.
Cummings, William C., to Scanwell Laboratories, Incorporated. Capture effect system. 3,711,857, Cl. 343-107.000.
Cummins, W. Wayne, to Howell, Rubie Nell Little. Automobile windshield and backglass removal tool. 3,711,677, Cl. 219-221.000.
Cunningham, Douglas James, to Wingard Limited. Seats for motor vehicles. 3,711,153, Cl. 247-346.000.
Curless, William T., to Willchemco, Inc. Process for manufacturing liquid fertilizer. 3,711,269, Cl. 71-36.000.
Curtis Nuclear Corporation: *See—*
Adams, Raymond J., 3,711,247.
Cusato, Anthony J., to Mann, Henry, Inc. Parallel jaw pliers. 3,710,657, Cl. 81-352.000.
Cutler-Hammer, Inc.: *See—*
Keranen, John J., 3,711,669.
Cutter Laboratories, Inc.: *See—*
Goodenough, Samuel H.; Brown, Ronald C.; and Roe, Benson B., 3,710,744.
Cytron, Robert Melvin; and Freishelm, Robert Alexander, Sr. Multipurpose mailer. 3,711,012, Cl. 229-92.700.
Dach, Hansjorg; and Gackstetter, Gunter, to Zahnradfabrik Friedrichshafen AG. Gear shift control system. 3,710,647, Cl. 74-731.000.
Dahl, James N., to Honeywell Information Systems Inc. Monolithic decimal, binary and logic function generator modular BCD and binary arithmetic and logical system. 3,711,693, Cl. 235-174.000.
Dahm, John R., to Jones & Laughlin Steel Corporation. Method and apparatus for use in measuring resultant tension forces in steel strip by sequentially establishing flux paths across sand strips. 3,711,766, Cl. 324-34.0st.
Dailey, John L.: *See—*
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Daimler-Benz Aktiengesellschaft: *See—*
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Bauer, Klaus; Naumann, Fritz; and Schobbe, Hermann, 3,710,688.
Gmeiner, Gunter; and Grabner, Christian, 3,711,056.
Helmer, Josef, 3,710,643.
Lamm, Heinz, 3,710,575.
Steinbrenner, Hans; Elorus, Hans-Jorg; and Grossner, Horst, 3,711,162.
Dale, John R.; Holler, Roger A.; and Goss, Garnet, to United States of America, Navy. Sonobuoy suspension system. 3,711,821, Cl. 340-2.000.
Dall'Asta, Leone: *See—*
Pedrazzoli, Andrea; and Dall'Asta, Leone, 3,711,484.
Daly, Robert A., to Emhart Corporation. Plunger support means for molten glass feeder. 3,711,266, Cl. 65-328.000.
Damsky, Walter; Joisten, Siegfried; and Sajben, Janos, to Farbenfabriken Bayer Aktiengesellschaft. Apparatus for the production of precision castings or injection-mouldings from plastics. 3,711,234, Cl. 425-307.000.
Dancy, Julian H.; Wiley, William O.; and Tyson, Thomas L., to Texaco Inc. Vortex combustion chamber. 3,711,238, Cl. 431-173.000.
Daniel, Edmond: *See—*
Reynard, Remi; Tindy, Roger; and Daniel, Edmond, 3,711,000.

Daniel, Fred P., to ESB Incorporated. Battery having terminal molded in wall of container. 3,711,335, Cl. 136-135.00s.

Daniels, Neville H. G.; and Wright, Edward S., to Anken Chemical & Film Corporation, mesne. Explosive pipe coupling method. 3,710,434, Cl. 29-470.100.

Danin, Alex. Multistory buildings and walls thereof. 3,710,521, Cl. 52-27.000.

Danneberg, Peter: *See—*
Bauer, Adolf; Weber, Karl Heinz; Danneberg, Peter; and Minck, Klaus, 3,711,468.
Heinz, Karl; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,711,509.
Weber, Karl Heinz; Bauer, Adolf; Danneberg, Peter; and Minck, Klaus, 3,711,467.
Weber, Karl-Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,711,470.

Dao, James; and Yew, Nelson C., to Etec Corporation. Scanning electron microscope scanning system. 3,711,711, Cl. 250-49.50a.

Dauscher, Rudi: *See—*
Schnegg, Robert; Heinroth, Karl-August; Neumann, Herbert; Dauscher, Rudi; Ohse, Helmut; and Nickel, Klaus, 3,710,565.

Davidson, Alan John: *See—*
George, Edwin Francis; and Davidson, Alan John, 3,711,493.

Davidson, Harry W.: *See—*
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Davidson, William M. Linear inflatable module device. 3,710,409, Cl. 9-312.000.

Davidson, William M.; and Cole, Howard W., Jr. Variable displacement for fence for oil spill containment and recovery. 3,710,943, Cl. 210-242.000.

Davies, John Glen. Remote monitoring and weapon control system. 3,711,638, Cl. 178-6.800.

Davis, Donald A.; and Grate, Gilbert M. Desk having extensible top section. 3,711,174, Cl. 312-194.000.

Davis Industrial (Equipment) Limited: *See—*
Davis, Maurice, 3,711,138.

Davis, Maurice, to Davis Industrial (Equipment) Limited. Fastening devices. 3,711,138, Cl. 287-189.36f.

Davis, Thomas L.; and Hansen, Joseph D., to Boeing Company, The. Ram pressure standoff extension and safe/arm mechanism for self arming munitions. 3,710,716, Cl. 102-7.400.

Davis, William D., to General Electric Company. Two-stage, single magnet mass spectrometer. 3,711,706, Cl. 250-41.9me.

Day, William B., to Sperry Rand Corporation. Microwave microcircuit. 3,711,778, Cl. 325-446.000.

Dayton Progress Corporation: *See—*
Keyes, Karl A.; Doing, Park A.; and Watkins, Edwin P., 3,710,666.

De Groft, Walter J., to Sanford Research Company. Hinge structure. 3,710,419, Cl. 16-171.000.

De Murgiondo, Jose H. Gun cleaning device. 3,710,411, Cl. 15-104.160.

Deaton, David W., to Ahldea Corporation. Inflatable patient enclosures. 3,710,791, Cl. 128-191.00a.

Deere & Company: *See—*
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DeGasperis, Lino E.: *See—*
Bunte, William S.; and DeGasperis, Lino E., 3,711,235.

Dehar, David C., to Ford Motor Company. Quick connect fitting for a hydraulic conduit. 3,711,125, Cl. 285-111.000.

Del Mar Engineering Laboratories: *See—*
Cherry, Raymond I., 3,711,812.

Demag Aktiengesellschaft: *See—*
Baumann, Hans G., 3,710,841.
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Demas, Nicholas L.; Fabian, George J.; Marderian, Alex S.; Minn, Sherman L.; Wack, John M.; Waxman, Herbert I.; and Wecker, Edwin W., to United States of America, Navy. Fluid flow velocity actuated safety and arming device. 3,710,722, Cl. 102-81.200.

Demierre, Jean, to Polytype AG. Adjustable cup support for use in continuous printing on conical cups. 3,710,712, Cl. 101-39.000.

Dempco, Inc.: *See—*
Vik, Albam M., 3,710,823.

Denes, Peter A. High voltage multi-layer cylindrical devices. 3,711,631, Cl. 174-120.0sr.

Dennler, Bernd: *See—*
Engelhardt, Manfred; Fruhstorfer, Wolfgang; Hesse, Reiner; Dennler, Bernd; and Baumer, Wilhelm, 3,711,554.

Deno, Don W., to General Electric Company. Means for reducing eddy current heating of a tank in electrical apparatus. 3,711,622, Cl. 174-35.0ce.

Desoutter Brothers Limited: *See—*
Allen, Michael George, 3,710,873.

Dethlefsen, Rolf, to Allis-Chalmers Manufacturing Company. Contact with arc propelling means embodied therein. 3,711,665, Cl. 200-144.00b.

Deutsch, Albert S.; and Poppo, Joseph M., to Polychrome Corporation. Light-sensitive compounds. 3,711,285, Cl. 96-75.000.

Deutsch, Peter R., to Phillips Petroleum Company. Method for molding articles having a nonlinear chamber. 3,711,590, Cl. 264-318.000.

Deutsche Akademie der Wissenschaften: *See—*
Krumbiegel, Peter; and Schmidt, Heinz, 3,711,421.

Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler: *See—*
Klebe, Hans; Lange, Ludwig; and Mang, Gunther, 3,710,979.

Dever, James L.: *See—*
Carlson, Richard D.; and Dever, James L., 3,711,563.

Dewar, Donald M.; and Wilseck, James. Drilling apparatus. 3,710,879, Cl. 175-388.000.

Dey, Arabinda N.; and Holmes, Robert W., to Mallory, P. R., & Co. Inc. Lithium-metal molybdate organic electrolyte cell. 3,711,334, Cl. 136-100.00r.

Deye, Neil S.; and Kuhn, Richard B., to North American Rockwell Corporation. Apparatus and information processing methods for a tracking system tracker unit. 3,711,637, Cl. 178-6.800.

Diamond Crystal Salt Company: *See—*
Leverenz, Melvin E.; and Leverenz, Kenneth H., 3,710,811.

Didier-Werke AG: *See—*
Hoffmann, Rolf, 3,710,992.

Diebold, James L.; and Wolf, Milton, to American Home Products Corporation. Novel spiro 2H-3,1-benzoxazine derivatives. 3,711,476, Cl. 260-244.00r.

Dieffenbacher, George W.; and Hadcock, Harold E., to General Electric Company. Method for removing a metalized device from a surface. 3,710,432, Cl. 29-426.000.

Dierschke, Eugene Gustav, to Texas Instruments, Incorporated. Diode array assembly for diode pumped lasers. 3,711,789, Cl. 331-94.50p.

Dietsch, Arne Kurt, to Telefonaktiebolaget L M Ericsson. Selecting device for cross-point selectors with cam contact actuating means. 3,711,670, Cl. 200-175.000.

Dietz, Robert E., to Square D Company. Electric plug-on circuit breaker with means for assuring tripping of the breaker before unplugging. 3,711,748, Cl. 317-112.000.

Dietzgen Corporation: *See—*
Schuman, Gordon A., Jr.; Collins, Raymond W.; and Koyama, Yukinori, 3,710,708.

Digital Security Systems, Inc.: *See—*
Guidi, Justin J.; and Middleton, Charles F., Jr., 3,710,976.

Dillenbeck, Warren H.; Muench, Paul W.; and Walker, Elmo R., to Borg-Warner Corporation. Method and apparatus for removing moisture from a refrigeration system. 3,710,585, Cl. 62-85.000.

Dirks Electronics Corporation: *See—*
Dirks, Gerhard, 3,711,836.

Dirks, Gerhard, to Dirks Electronics Corporation. Cyclic data handling systems. 3,711,836, Cl. 340-172.500.

Dismore, Paden F., to Du Pont de Nemours, E. I., and Company. Preservation of polyamidic membranes. 3,710,945, Cl. 210-321.000.

Disselkotter, Hans, to Farbenfabriken Bayer Aktiengesellschaft. 2,3-Dihydro-1-oxa-4-thia-3,5-diazin-2-one-4, 4-dioxides. 3,711,475, Cl. 260-243.00r.

Dixon, James E. Cue ball direction inducating apparatus for use in playing pool. 3,711,091, Cl. 273-2.000.

Doebel, Karl J.; and Francis, John E., to Ciba-Geigy Corporation. 3-Hydrazino-1,2,8,9-tetrazaphenalenes. 3,711,473, Cl. 260-240.00g.

Dohogne, Linus E.: *See—*
Koehler, Albert T.; Shideler, Paul J.; and Dohogne, Linus E., 3,710,710.

Doi, Toshio; and Kudo, Mitsuhiro, to Hitachi, Ltd. Method of producing superconducting strips. 3,710,844, Cl. 164-86.000.

Doing, Park A.: *See—*
Keyes, Karl A.; Doing, Park A.; and Watkins, Edwin P., 3,710,666.

Dolejs, Ladislav; Kahovcova, Kitka; Slama, Karel; and Sorm, Frantisek, to Ceskoslovenska Akademie ved. Phenyl ethers. 3,711,519, Cl. 260-348.00r.

Dolin, Stanley A.; Folch, Andres, Jr.; and Geiger, Dana F., to Optical Coating Laboratory, Inc. Rapid scan identifier for use in infrared absorption spectroscopy. 3,711,708, Cl. 250-43.500.

Dominion Engineering Works, Limited: *See—*
Truxa, Leslie, 3,711,368.

Domnitch, Irving. Incinerator emissions reduction system. 3,710,555, Cl. 55-225.000.

Donlon, Richard H.; Close, David E.; and Loomis, Peter B., to Transportation Technology, Inc. Transportation system with docking and lane transfer apparatus. 3,710,724, Cl. 104-31.000.

Donnelly, James J., to Mobil Oil Corporation. Process for the production of microbial cells. 3,711,372, Cl. 195-1.000.

Dorman, Knownly R., to United States of America, Interior. Centrifugal stower. 3,710,925, Cl. 198-128.000.

Dormeyer Industries, Inc.: *See—*
Flentge, Robert W., 3,711,806.

Dorr-Oliver Incorporated: *See—*
Black, Howard; and Breier, Morton A., 3,710,917.
Kennel, George Wm.; and Ornstein, Flushing Gerald, 3,711,218.

Dorsch, Heinz. Control installation for the cooling air fan of internal combustion engines. 3,710,765, Cl. 123-41.120.

Doty, John T. Collar puller for metal pipe. 3,710,427, Cl. 29-237.000.

Doucet, Daniel R.: *See—*
Pierce, Edward J.; and Doucet, Daniel R., 3,711,815.

Douglas, Alan David: *See—*
Tulk, Alexander Stuart; Douglas, Alan David; and Ericson, Ivan L., 3,711,205.

Douglas, Donald J. Headgear. 3,710,393, Cl. 2-14.00w.

Douglass, Edward T., Jr. Apparatus for storing and feeding bulky materials. 3,710,964, Cl. 214-17.00d.

Dow Chemical Company, The: *See—*
Alfrey, Turner, Jr.; and Schrenk, Walter J., 3,711,176.
Brubaker, Burton D., 3,711,599.
Grant, Charles H., 3,710,718.
Gritzner, Gerhard, 3,711,388.
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Moore, William Ross, 3,711,453.
Pitts, Charles A., 3,710,866.

Rubens, Louis C., 3,711,430.
Ruetman, Sven H., 3,711,480.
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Stavropoulos, William, S.; and Thiegs, Bernard J., 3,711,250.
Torba, Florence E., 3,711,486.

Downing, James W.; and Harris, Charles V., to McDonnell Douglas Corporation. Control setting apparatus. 3,710,644, Cl. 74-526.000.

Doyle, Arnol W.: *See—*
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Draber, Wilfried; Timmler, Helmut; Buchel, Karl-Heinz; and Plempel, Manfred, to Farbenfabriken Bayer Aktiengesellschaft. Certain α,α-disubstituted benzylimidazoles and salts. 3,711,487, Cl. 260-294.80g.

Dracon Industries: *See—*
Drake, King D., 3,711,053.

Drake, King D., to Dracon Industries. Telescoping wall mounting bracket for electrical racks. 3,711,053, Cl. 248-298.000.

Dresser Industries, Inc.: *See—*
Cope, Geoffrey Wilton, 3,710,951.
Henry, Ralph E., 3,711,104.
Mitchell, Rayford E., 3,710,864.

DSO Balkancar: *See—*
Stoytenev, Stoyteno Grigorov; Stoilov, Gueorgui Kirilov; Tsanev, Tsani Konstantinov; Gueorguiev, Zdravko Marinov; and Stoyanov, Gueorgui Yordanov, 3,710,967.

Du Pont de Nemours, E. I., and Company: *See—*
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Ahramjian, Leo, 3,711,364.
Brake, Loren D., 3,711,550.
Chu, Edward; and Harper, Lee R., 3,711,445.
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Dismore, Paden F., 3,710,945.
Hammer, Clarence Frederick; and Keller, Philip Joseph, 3,711,435.
Herman, Alva L., 3,711,356.
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Koch, Theodore A.; and Eleuterio, Herbert S., 3,711,539.
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Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Dubinsky, Rudolf Solomonovich; Latash, Jury Vadimovich; Emelyanenko, July Georgievich; and Baglai, Vitaly Mikhailovich, 3,711,616.

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Dulhunty, Philip Wellesley, to Dulmison (Australia) Pty., Limited. Cable vibrator damper with moveable additional weights. 3,711,624, Cl. 174-42.000.

Dulmison (Australia) Pty., Limited: *See—*
Dulhunty, Philip Wellesley, 3,711,624.

Dumire, Leo G.: *See—*
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Murfree, James A., Jr.; and Duncan, William A., 3,711,427.

Dunham, Kenneth R.; and Yost, Marshall E., to Eastman Kodak Company. Photoresist compositions. 3,711,287, Cl. 96-115.00p.

Dunigan, Thomas E.; Sisco, George C.; and Pell, Laurence W., to United States of America, Army. Cellular nitrocellulose based composition and method of making. 3,711,343, Cl. 149-2.000.

Dunlop Holdings Limited: *See—*
Gurney, William A., 3,711,259.

Dupuis, Jean M., to Microsystems International Limited. Plastic support means for lead frame ends. 3,711,625, Cl. 174-52.0pe.

Duquesne, Victor. Apparatus for gripping a wheel to permit removal of tire. 3,710,838, Cl. 157-1.240.

Duryea, Charles S. Boat flanking rudder system. 3,710,749, Cl. 114-163.000.

Dustex Corporation: *See—*
Brookman, Roger S., 3,710,554.

Dye, Kenneth R., to General Motors Corporation. Accelerator. 3,710,690, Cl. 91-411.00a.

Eakins, Paul W., to Foster Brothers Manufacturing Company. Sofa bed folding fixture. 3,710,402, Cl. 5-13.000.

Eastman Kodak Company: *See—*
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Dunham, Kenneth R.; and Yost, Marshall E., 3,711,287.
Johnson, Arthur L., 3,711,280.
Valerio, Paul F.; and Werner, Robert M., 3,710,517.

Eby, John B. Screwdriver with screw holding attachment. 3,710,835, Cl. 145-52.000.

Eccettuato, Vittorio: *See—*
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Eckenfelder, Robert Charles; Kautz, Robert Frederick; and Compoly, Albert William, to Bendix Corporation, The. Polyphase transformer for a variable speed constant frequency system. 3,711,762, Cl. 321-57.000.

Eckert, George W.: *See—*
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Eddy, George D. Sheet-metal shearing machine. 3,710,665, Cl. 83-374.000.

Edstrom, Gene H.: *See—*
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EFMC Corporation: *See—*
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Egan Machinery Company: *See—*
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Khokhlov, Sergei Fedotovich; Yakovin, Viktor Petrovich; Sysoev, Petr Ivanovich; and Egorov, Valery Pavlovich, 3,711,070.

Ehinger, Adolf. Shredder for documents and the like. 3,711,034, Cl. 241-100.000.

Ehlscheid, Gunter, to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei. Roller adjustment in envelope folding machines. 3,710,694, Cl. 93-62.000.

Ehrat, Kurt, to Ciba-Geigy AG. Method and apparatus for coding messages. 3,711,645, Cl. 178-22.000.

Ehrenreich, A., & Cie: *See—*
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Eichhorst, Ingo: *See—*
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Eidelberg, Jonah; Mooney, Thomas; and Brett, John J., to Electrical Fittings Corporation. Liquid-tight swivel coupler for electrical conduit. 3,710,911, Cl. 174-84.00s.

Eilingsfeld, Heinz: *See—*
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Ekelund, Christer. Hosiery slitter. 3,710,663, Cl. 83-156.000.

Ekman, Carl F. W.: *See—*
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Elco Corporation: *See—*
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Eldapat General, Inc.: *See—*
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Electric & Musical Industries Limited: *See—*
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Electrovert Manufacturing Co. Ltd.: *See—*
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Eleuterio, Herbert S.: *See—*
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Elfline, Robert J., to Research and Safety Devices Corporation. Safety closure. 3,710,970, Cl. 215-9.000.

Elliott, Donald A.: *See—*
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ELMEG Electro-Mechanik GmbH: *See—*
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Endo, Masaaki; Miura, Mituo; and Shinozaki, Mamoru, to Takenaka Komuten Company, Ltd. Chain cutter type excavator and ditch excavating method. 3,710,878, Cl. 175-66.000.

Endo, Takaya: *See—*
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Engelbach, Heinz: *See—*
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Engelhardt, Manfred; Fruhstorfer, Wolfgang; Hesse, Reiner; Dennler, Bernd; and Baumer, Wilhelm, to Merck, E., A.G. 4-Hydroxy-3,5 ditertiary phenones. 3,711,554, Cl. 260-591.000.

Ennis, Brian, to Asquith, William, Limited. Hydrostatic bearings. 3,711,167, Cl. 308-500.00r.

Ensor, Gordon Roy, to Monsanto Chemicals Limited. Monoalkylation of alkylidene bis(phenol). 3,711,559, Cl. 260-619.00a.

Environment/One Corporation: *See—*
Coffey, Peter E., 3,711,248.
Erdolchemie Gesellschaft mit beschrankter Haftung: *See—*
Lauer, Hubert; and Schleppinghoff, Bernhard, 3,711,565.
Erickson, Allen M. Frustrated total internal reflection laser Q-switch. 3,711,791, Cl. 331-94.50q.
Ericson, Ivan L.: *See—*
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Ernst, Richard J.; and Rod, Trygve R., to Xerox Corporation. Label transfer wheel with vacuum port filter means. 3,711,357, Cl. 156-556.000.
Ernst, Richard R., to Varian Associates. Noise excited resonance apparatus. 3,711,764, Cl. 324-.50r.
Ersek, Robert A., to University of Minnesota, The Regents of the. Method of repairing bone fractures with expanded metal. 3,710,789, Cl. 128-92.0bc.
ESB Incorporated: *See—*
Daniel, Fred P., 3,711,335.
Esseiva, Roger Marcel; Perrin, Louis R.F.J.; and Romang, Lucien Willy, to Seitz & Co., Les Brenets. Method of removing portions of coating by glow discharge. 3,711,311, Cl. 117-8.000.
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Estes, John H.; Herbstman, Sheldon; and Kravitz, Stanley, to Texaco Inc. Aromatic hydrogenation. 3,711,566, Cl. 260-667.000.
Estes, John Harold; Kravitz, Stanley; and Suggitt, Robert M., to Texaco Inc. Selective hydrocracking and isomerization of paraffin hydrocarbons. 3,711,399, Cl. 208-112.000.
Etablissements J. Berthelat et Fils: *See—*
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Etawah Manufacturing Company, Inc.: *See—*
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Evans, Duane E.; Tyler, David A.; and Gibson, Myron R. Dual clutch free turbine engine. 3,710,576, Cl. 60-39.030.
Evans, Harry James, to Flextube Limited. Hose end couplings. 3,711,131, Cl. 285-256.000.
Evans, Louis. Spring-actuated cue. 3,711,093, Cl. 273-69.000.
Evans Tool & Engineering Inc.: *See—*
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Eveland, James A. Clutch, brake and knife arrangement for copying machine. 3,710,664, Cl. 83-230.000.
Ewald, Ronald F. Valve button. 3,711,031, Cl. 239-601.000.
Eynon, John E., to Abitiba Paper Company Ltd. Log carrier or bunk. 3,710,969, Cl. 214-130.00r.
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Fedders Corporation: *See—*
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Federowicz, Samuel R. Utility frame for suspended ceiling construction. 3,710,520, Cl. 52-27.000.
Feinberg, Jacob Howard. Photopolymerizable epoxy systems containing substituted cyclic amides or substituted ureas as gelation inhibitors. 3,711,390, Cl. 204-159.110.
Feinberg, Jacob Howard, to American Can Company. Photopolymerizable epoxy systems containing sulfoxide gelation inhibitors. 3,711,391, Cl. 204-159.110.
Fentzke, Daniel A., to Emhart Corporation. Composite refractory for use in molten glass feeder. 3,711,267, Cl. 65-330.000.
Ferrari, Antonio. Plural source dispenser with interconnected discharge volume varying means. 3,710,982, Cl. 222-134.000.
Ferrari, Giorgio; and Casagrande, Cesare. Method for extraction of the Ocotea alkaloid glaziovii. 3,711,485, Cl. 260-289.00a.
Ferry, Carolyn Patricia. Crutches. 3,710,807, Cl. 135-49.000.
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Field, Nathan D.; Randall, David I.; and Vogel, Calvin, to GAF Corporation. Preparation of phosphonyl dihalides. 3,711,541, Cl. 260-543.00p.

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Figiel, Francis John, to Allied Chemical Corporation. Process and apparatus for removing liquids from solid surfaces. 3,710,450, Cl. 34-9.000.

Filia, George J., to Sargent & Company. Terminal locator for crimping tool. 3,710,611, Cl. 72-410.000.

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Wendel, Gunther; and Fingerle, Rudolf, 3,711,168.

Fink, Arthur Alan. Modular system for transporting and storing tape cartridges and cassettes. 3,710,900, Cl. 190-51.000.

Finke, William H.: *See—*
Conant, Robert K.; and Finke, William H., 3,710,702.

Finn Industries, Inc., The: *See—*
Alexander, John; and Adams, Leonard, Jr., 3,711,358.

Finnemore, Harlan E., to Air Preheater Company, Inc., The. Ball-and-socket coupling for rotor. 3,710,851, Cl. 165-9.000.

Firnig, Fritz, to Olympia Werke AG. Contactfree data input device. 3,711,852, Cl. 340-365.00c.

First National Bank of Chicago, The: *See—*
Baum, Frank M., 3,710,985.

Fischer, Adolf: *See—*
Rohr, Wolfgang; Fischer, Adolf; and Zschocke, Albrecht, 3,711,492.

Fischer, David J.: *See—*
Chu, Bing C.; Fischer, David J.; and Kunz, Hans J., 3,711,073.

Fischer, Karl, Apparate-u. Rohrleitungsbau: *See—*
Rothert, Horst; and Schumacher, Rolf, 3,711,253.

Fischer, Paul W.: *See—*
Pye, David S.; Fischer, Paul W.; and Gallus, Julius P., 3,711,405.

Fisher, John F.; and Zeller, Burton S., to Clark Equipment Company. Transmission. 3,710,637, Cl. 74-331.000.

Fishman, Abraham. Apparatus for cutting thin-walled objects. 3,710,444, Cl. 30-265.000.

Fishons Limited: *See—*
Hazard, Richard; and King, John, 3,710,459.

Fitzgerald, William Vincent, Jr.; and Lemmon, Richard Charles, to RCA Corporation. High voltage and width regulation circuit. 3,711,738, Cl. 315-29.000.

Fitzsimmons, Richard D.: *See—*
True, Harold C.; and Fitzsimmons, Richard D., 3,710,890.

Flanagan, Robert M.; and Johnson, Glenn W., to Amerace Esna Corporation. Timing device. 3,711,797, Cl. 335-61.000.

Flentge, Robert W., to Dormeyer Industries, Inc. Power pack. 3,711,806, Cl. 336-92.000.

Flextube Limited: *See—*
Evans, Harry James, 3,711,131.

F.LLI Pinfari S.r.l.: *See—*
Pinfari, Italo; and Begotti, Pino, 3,710,725.

Flood, William H.: *See—*
Shick, Philip E.; and Flood, William H., 3,711,593.

Flugger, Ray T. Automotive muffler. 3,710,891, Cl. 181-50.000.

Flying Dutchman, Inc.: *See—*
Stauffer, Aaron Z.; Herr, John H.; Lepley, James W.; and Zimmerly, James C., 3,710,960.

FMC Corporation: *See—*
Brociner, Haskal, 3,710,941.
Trechock, Jack; and Saller, Erik, 3,711,318.

Folch, Andres, Jr.: *See—*
Dolin, Stanley A.; Folch, Andres, Jr.; and Geiger, Dana F., 3,711,708.

Foley, Norman Leslie, to Auscoteng Pty. Ltd. Vacuum pump. 3,711,228, Cl. 418-98.000.

Folske, Donald W.: *See—*
Reckdahl, Segwald J.; and Folske, Donald W., 3,710,457.

Ford, Brian; and Clapp, Malcolm, to British Aircraft Corporation (A.T.) Limited. Sighting means for missiles. 3,711,041, Cl. 244-3.110.

Ford Motor Company: *See—*
Dehar, David C., 3,711,125.
Hideg, Laszlo; and Bishop, Irving N., 3,711,069.

Fork, Werner: *See—*
Baer, Wolfgang; and Fork, Werner, 3,710,748.

Forkner, John F., to Philco-Ford Corporation. Laser apparatus. 3,711,788, Cl. 331-94.500.

Forkner, John H. Method for producing expanded food products. 3,711,300, Cl. 99-138.000.

Foroulis, Zisis Andrew, to Esso Research and Engineering Company. Inhibition of corrosion in cooling water systems with mixtures of gluconate salts and silicate salts. 3,711,246, Cl. 21-2.700.

Forster, Eckerhard: *See—*
Von Bogdandy, Ludwig; Richter, Helmut; and Forster, Eckerhard, 3,711,277.

Foster Brothers Manufacturing Company: *See—*
Eakins, Paul W., 3,710,402.

Foster, Harold M.; Rees, Thomas C.; and Spencer, Floyd G., to Sherwin-Williams Company, The. Process for the manufacture of N,N-bis (2-chloroethyl)-2-nitro-4-alkylaniline. 3,711,552, Cl. 260-577.000.

Foster, Leigh Curtis, to Zenith Radio Corporation. Corona discharge voltage regulator. 3,711,735, Cl. 313-216.000.

Foster Wheeler Corporation: *See—*
Barratt, Robert O.; and Connell, John M., 3,710,556.

Fouts, Drexel R.: *See—*
Boyer, Ronald G.; and Fouts, Drexel R., 3,710,904.

Fowler, Aubrey A., Jr.: *See—*
Fowler, Aubrey A., Jr.; and McKee, Henry O. (said McKee assor. to said), 3,711,581.

Fowler, Aubrey A., Jr.; and McKee, Henry O., said McKee assor. to said Fowler, Aubrey A., Jr. Method of molding a composite foamed resin article. 3,711,581, Cl. 264-45.000.

Fowler, John H., Jr. Lift device. 3,710,962, Cl. 214-75.00r.

Fox, Homer M.: *See—*
Ashe, Benedict H., Jr.; and Fox, Homer M., 3,711,396.

Fram Corporation: *See—*
Maddocks, Gerald E., 3,710,560.
Strick, Karl H., 3,711,219.

Francis, John E.: *See—*
Doebel, Karl J.; and Francis, John E., 3,711,473.

Franklin, David M., to Steelcraft Corporation. Temperature modulated draft system for incinerator. 3,710,738, Cl. 110-18.00r.

Franks, Hobart T. Shipping and display container. 3,710,973, Cl. 220-4.00r.

Frappier, Robert H.: *See—*
Wagers, William O.; Frappier, Robert H.; McDonald, William S.; and Boggs, Charles L., 3,711,352.

Fraser, Richard J.; and McGrath, John E., Jr. Folding camera viewfinder. 3,710,697, Cl. 95-47.000.

Frawley, Kenneth O. Parts dispenser and positioner. 3,710,477, Cl. 29-203.00b.

Frazier, Alva W., to Tennessee Valley Authority. Stabilization of polyphosphate fertilizer solutions. 3,711,268, Cl. 71-34.000.

Frazin, Benjamin. Combined electric continuity checker and flashlight. 3,711,768, Cl. 324-53.000.

Freedman, Stuart I., to Kidde, Walter, & Company, Inc. Cart with brake and retention system. 3,710,895, Cl. 188-5.000.

Freeman, Alfred B. Automatic harmony apparatus. 3,711,618, Cl. 84-1.030.

Freisberg, Karl-Otto: *See—*
Klaus, Irmscher; Cimbollek, Gerhard; Orth, Dieter; Nowak, Herbert; and Freisberg, Karl-Otto, 3,711,478.

Freishelm, Robert Alexander, Sr.: *See—*
Cytron, Robert Melvin; and Freishelm, Robert Alexander, Sr., 3,711,012.

French, Willis E. Electric razor cleaner. 3,710,413, Cl. 15-405.000.

Frey, Peter: *See—*
Gerber, Hermann; and Frey, Peter, 3,711,732.

Frick, Harold L., to Whirlpool Corporation. Windowed oven door. 3,710,776, Cl. 126-200.000.

Fricke, Vourdon H.: *See—*
Brown, Hugh E.; Fricke, Vourdon H.; and Gerfen, Henry C., 3,710,809.

Friction Products, Co.: *See—*
Lowey, Francis J.; and Gerding, John E., 3,710,914.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Meyer, Joachim; and Pfeffer, Josef, 3,710,857.
Muller, Dietrich, 3,711,822.

Fritz, Bauer. Continuously adjustable lifting devices. 3,711,054, Cl. 248-400.000.

Fritz, Thomas W.; Gilbo, Charles F.; and Johnson, Norman A., to Armstrong Cork Company. Guide groove for staple gun. 3,710,522, Cl. 52-105.000.

Frohberger, Paul-Ernst: *See—*
Widdig, Arno; Sasse, Klaus; Grewe, Ferdinand; Scheinpflug, Hans; Frohberger, Paul-Ernst; and Kaspers, Helmut, 3,711,503.

Fromme Forderanlagen GmbH: *See—*
Fromme, Hans-Georg; Nadler, Franz; Zimmer, Siegfried; and Weller, Kurt, 3,710,923.

Fromme, Hans-Georg; Nadler, Franz; Zimmer, Siegfried; and Weller, Kurt, to Fromme Forderanlagen GmbH. Article sorting installation with an endless conveyor discharge mechanism. 3,710,923, Cl. 198-81.000.

Fruhstorfer, Wolfgang: *See—*
Engelhardt, Manfred; Fruhstorfer, Wolfgang; Hesse, Reiner; Dennler, Bernd; and Baumer, Wilhelm, 3,711,554.

Fry, Arnold H. Building wall section fabricating machine. 3,711,007, Cl. 227-101.000.

Fubmatic Inter AG: *See—*
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Fuchs, Gilbert N.: *See—*
Crowley, Norman R.; Fuchs, Gilbert N.; and Wink, Randall W., 3,710,958.

Fueltime Saver Corporation: *See—*
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Fuji Photo Film Co., Ltd.: *See—*
Yoshida, Kazutaka; and Ishiwata, Mamoru, 3,711,312.

Fuji Shashin Film Kabushiki Kaisha: *See—*
Okano, Takeshi, 3,711,172.

Fujimori, Noboru: *See—*
Sato, Shui; Sakazume, Kaiichiro; Sakamoto, Eiichi; and Fujimori, Noboru, 3,711,288.

Fujiwara, Katsuji. Automatic vent valve for a steam trap. 3,711,017, Cl. 236-59.000.

Fujiwara, Yukinari: *See—*
Kaneko, Yoichi,; Fujiwara, Yukinari; Kimura, Katuhiro; and Kamimura, Masao, 3,711,792.

Fukaya, Shigeo: *See—*

Kuzuya, Takashi; Hayashi, Toshihiko; and Fukaya, Shigeo, 3,711,009.
Fukazawa, Nobuo: *See—*
Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, 3,711,582.
Fukusuke Kabushiki Kaisha Sakaishi: *See—*
Tsujimoto, Toshio, 3,710,397.
Fuller, Robert T.; and Smith, Keith A. Edge-forming means for flooring. 3,710,414, Cl. 16-8.000.
Fulwyler, Mack J.; Steinkamp, John A.; and Coulter, James R., to United States of America, Atomic Energy Commission. Multisensor particle sorter. 3,710,933, Cl. 209-3.000.
Funakoshi, Yoshiro: *See—*
Asogawa, Tatsuo; Matsumura, Yoshihiko; Satani, Eiji; Wada, Shyozo; and Funakoshi, Yoshiro, 3,711,301.
Funberg, Izrail Leibovich; Nikolaev, Petr Petrovich; Gora, Viktor Epifanovich; Gulenko, Nikolai Nikolaevich; Papko, Viktor Ivanovich; Rozhkov, Nikolai Alexandrovich; Kats, Elya Isaevich; and Krutogolov, Grigory Vasilievich. Machine for cleaning ballast in ailway tracks. 3,710,869, Cl. 171-16.000.
Funkhouser, Terry D.: *See—*
Tschopp, Lloyd D.; and Funkhouser, Terry D., 3,711,569.
Fuqua, Lloyd T., to General Motors Corporation. Fasteners. 3,710,673, Cl. 85-75.000.
Furbeck, Warren R.: *See—*
Lee, Charles A.; and Furbeck, Warren R., 3,710,536.
Fusion, Incorporated: *See—*
Zelna, Robert P., 3,711,020.
Gabray, Emile, to Compagnie Generale de Radiologie. X-ray tube having a rotary anode. 3,711,736, Cl. 313-330.000.
Gackstetter, Gunter: *See—*
Dach, Hansjorg; and Gackstetter, Gunter, 3,710,647.
GAF Corporation: *See—*
Field, Nathan D.; Randall, David I.; and Vogel, Calvin, 3,711,541.
Randall, David I.; and Wynn, Robert W., 3,711,272.
Gagne, Pierre: *See—*
Blanc, Remy; Chapuis, Alain; and Gagne, Pierre, 3,710,601.
Galantay, Eugene E.: *See—*
Coombs, Robert V.; and Galantay, Eugene E., 3,711,521.
Gallus, Julius P.: *See—*
Pye, David S.; Fischer, Paul W.; and Gallus, Julius P., 3,711,405.
Galmiche, Philippe M.: *See—*
Hivert, Andre R.; and Galmiche, Philippe M., 3,711,279.
Galvagni, Alighiero; Raccanelli, Mirco; and Eccettuato, Vittorio, to Olivetti, Ing. C., & C., S.p.A. Self-adapting synchronization system for reading information from a moving support. 3,711,843, Cl. 340-174.10h.
Gans, Francois F. Segmented glass laser. 3,711,790, Cl. 331-94.500.
Gardner, Willis W., to Waukesha Bearings Corporation. Tilting-flexible pad journal bearing. 3,711,169, Cl. 308-73.000.
Garfinkel, Harmon M., to Corning Glass Works. Purification of a molten salt bath. 3,711,393, Cl. 204-180.00r.
Garrett Corporation, The: *See—*
Matulich, Dan S., 3,711,044.
Garrett, Jim C.; Johnson, Robert H.; and Shelton, Jack. Distributing terminal assembly test apparatus. 3,711,661, Cl. 179-175.10r.
Garrison, William E., to Magic Circle Corporation, The. Wax shaping tool. 3,711,211, Cl. 401-2.000.
Garrity, Paul G.: *See—*
Bacevius, Joseph G., 3,711,699.
Bacevius, Joseph G., 3,711,703.
Garrone, Franco, to AMF Incorporated. Apparatus for separating solid particles suspended in a gaseous stream. 3,710,561, Cl. 55-429.000.
Gates Rubber Company, The: *See—*
Russ, Paul E., Sr., 3,711,165.
Gavagan, James A., to Irvin Industries Inc. Buckle mechanism. 3,710,426, Cl. 24-224.00r.
GCA Corporation: *See—*
Lilienfeld, Pedro; and Doyle, Arnol W., 3,711,707.
Gehlert, Rolf; and Schmidt, Ulrich, to Agfa-Gevaert Aktiengesellschaft. Slide projector with automatic magazine resetting means. 3,711,195, Cl. 353-119.000.
Geiger, Dana F.: *See—*
Dolin, Stanley A.; Folch, Andres, Jr.; and Geiger, Dana F., 3,711,708.
Geiger, Kenneth H.; and LeMaire, Hubert, to Labatt Breweries of Canada Limited. Clarifying and stabilizing beer. 3,711,293, Cl. 99-48.000.
General American Transportation Corporation: *See—*
Vaitys, Ramojus P., 3,710,966.
General Binding Corporation: *See—*
Staats, Henry N.; and Levitan, Maurice D., 3,711,355.
General Cable Corporation: *See—*
Jachimowicz, Ludwik, 3,711,621.
General Connector: *See—*
Pierce, Edward J.; and Doucet, Daniel R., 3,711,815.
General Dynamics Corporation: *See—*
Rogers, Stanley, 3,711,834.
General Electric Company: *See—*
Borom, Marcus P.; and Johnson, Lyman A., 3,710,625.
Cordo, Francis Vincent, 3,710,435.
Cornelius, Frank L., 3,710,778.
Davis, William D., 3,711,706.
Deno, Don W., 3,711,622.
Dieffenbacher, George W.; and Hadcock, Harold E., 3,710,432.
Graves, Ralph L., 3,711,671.
Harnden, John D., Jr., 3,711,668.
Kelling, Leroy U. C., 3,711,783.
Krulls, Gerd E.; and Ruth, William H., 3,710,478.
Liberti, Frank N., 3,711,441.
Metro, John G., 3,711,652.
Pfeifer, Charles W.; and Bobear, William J., 3,711,520.
Pyle, James J., 3,711,365.
Rampel, Guy, 3,711,331.
Rice, Joe R., 3,710,568.
Shinn, Jeffrey N.; and Woodson, Carl W., 3,710,814.
Staub, Fred W., 3,710,854.
Tasca, Dante M.; Harnden, John D., Jr.; and Martzloff, Francois D., 3,711,794.
Worden, Robert F., 3,711,635.
General Fireproofing Company, The: *See—*
Hage, Carl H., 3,710,974.
General Foods Corporation: *See—*
Leidy, Harold T.; Kerrigan, Charles M.; Tewey, Robert T.; and Bartenbach, Louis, 3,711,291.
Mitchell, William A.; and Stahl, Howard D., 3,711,302.
General Motors Corporation: *See—*
Berman, Dennis W.; and Gergoe, Bela, 3,710,417.
Dye, Kenneth R., 3,710,690.
Fuqua, Lloyd T., 3,710,673.
Ghirardi, Paul S., 3,711,632.
Ghirardi, Paul S.; and McGowan, Eugene V., 3,711,633.
Kolbe, William H.; and Sagady, Alexander J., 3,711,225.
General Tire & Rubber Company, The: *See—*
Uelzmann, Heinz, 3,711,463.
Uelzmann, Heinz; and Hidinger, David C., Jr., 3,711,466.
Genton, Richard G. Air filter and dust collector. 3,710,552, Cl. 55-291.000.
George, Edwin Francis; and Davidson, Alan John, to Imperial Chemical Industries Limited. Plant growth regulating composition. 3,711,493, Cl. 260-502.040r.
George, Erie: *See—*
Hunter, John P., Jr.; and George, Erie, 3,710,398.
Gerard, Milan E.: *See—*
Rush, Hugh M.; and Gerard, Milan E., 3,711,202.
Gerber, Hermann; and Frey, Peter, to Saia A.G. Miniature synchronous motor. 3,711,732, Cl. 310-162.000.
Gerber Scientific Instrument Company, The: *See—*
Rich, Leonard G.; and Blake, Dale G., 3,711,717.
Gerding, John E.: *See—*
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Gerfen, Henry C.: *See—*
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Gergoe, Bela: *See—*
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Gerholt, Willem; and Heidemann, Gerrit, to Industriele Onderneming Wavin N.V. Connections for insulated pipes. 3,711,124, Cl. 285-47.000.
Gerick, John: *See—*
Pachmayr, Frank A.; Farrar, Jack R.; and Gerick, John, 3,710,496.
German, Louis E., to Morton Buildings, Inc. Down pressure assembly for truck mounted auger. 3,710,875, Cl. 173-28.000.
Gerrard, A. J., & Company: *See—*
Koehler, Albert T.; Shideler, Paul J.; and Dohogne, Linus E., 3,710,710.
Gessler, Hans, to Schwahische Huttenwerke GmbH. Silo container. 3,710,959, Cl. 214-17.00d.
Geusic, Joseph Edward; and Van Uitert, Le Grand Gerard, to Bell Telephone Laboratories, Incorporated. Magnetic single wall domain arrangement. 3,711,841, Cl. 340-174.0tf.
Gevaert-Agfa N.V.: *See—*
Van Den Enden, Gaston Alfons; and Ceulemans, Hugo Frans, 3,710,977.
Gewerkschaft Eisenhutte Westfalia: *See—*
Losch, Heinz; and Mecklenbrauck, Heinrich, 3,710,963.
Ghirardi, Paul S., to General Motors Corporation. End fitting for corrugated conduit. 3,711,632, Cl. 174-135.000.
Ghirardi, Paul S.; and McGowan, Eugene V., to General Motors Corporation. Fitting means for axially slit corrugated conduits. 3,711,633, Cl. 174-135.000.
Giacini, Christopher: *See—*
Mookherjee, Braja D.; Giacini, Christopher; Karoll, Elizabeth A.; and Vock, Manfred H., 3,711,482.
Gibbs, James W.: *See—*
Gibbs, John L.; and Gibbs, James W., 3,711,063.
Gibbs, John L.; and Gibbs, James W. Anti-reverse flow valve. 3,711,063, Cl. 251-276.000.
Gibson, Myron R.: *See—*
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Giesemann, Rolf: *See—*
Heinz, Karl; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,711,509.
Weber, Karl-Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,711,470.
Gilbert and Barker Manufacturing Company: *See—*
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Gilbert, Ronald E.; Jamieson, Donald R.; and Clampitt, Bert H., to Gulf Research & Development Company. Process for the preparation of ethylene-carboxylic acid polymers having improved optical properties. 3,711,456, Cl. 260-88.10r.

Gilbo, Charles F.: *See*—
Fritz, Thomas W.; Gilbo, Charles F.; and Johnson, Norman A., 3,710,522.

Gillette Company, The: *See*—
Webster, Milo E., 3,710,984.

Gilson, Stanley M. Hydrocarbon vapor collecting apparatus. 3,710,830, Cl. 141-93.000.

Ginda Inc.: *See*—
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Gindy Manufacturing Corporation: *See*—
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Giovanni, Sesto S.: *See*—
Vargiu, Silvio; Spelta, Osvaldo; Giovanni, Sesto S.; and Abruzzi, Pierluigi, 3,711,431.

Girardin, Roger, to Ateliers des Charmilles, S.A. Apparatus for holding and guiding an elongated electrode in electro-erosion machining. 3,711,675, Cl. 219-69.00e.

Giraud, Pierre; and Redon, Michel, to Intertechnique S.A. Method for correcting systematic errors in differential linearity of a pulse height-to-time converter and converter for the application of said method. 3,711,851, Cl. 340-347.0cc.

Girling Limited: *See*—
Hughes, Michael James, 3,710,898.

Gitt, Robert Lewis: *See*—
Brandeau, Edward Peter; Chaffee, Quentin Roosevelt; and Gitt, Robert Lewis, 3,710,620.

Giudice, Aldo: *See*—
Scarfi, Alberto; Gugliotta, Emanuele; and Giudice, Aldo, 3,711,597.

Giuggioli, Mario: *See*—
Bartalini, Gastone; Brischetto, Nedo; and Giuggioli, Mario, 3,711,557.

Gladow, Dean E., to Rolamite Incorporated. Rotary motion apparatus. 3,710,631, Cl. 74-89.200.

Glass, Marvin, & Associates: *See*—
Breslow, Jeffrey D.; Meyer, Burton C.; and Glass, Marvin I., 3,711,101.

Glass, Marvin I.: *See*—
Breslow, Jeffrey D.; Meyer, Burton C.; and Glass, Marvin I., 3,711,101.

Glassman, Jacob A. Catamenial tampon. 3,710,793, Cl. 128-285.000.

Glaverbel S.A.: *See*—
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Gleason, Edward Hinsdale: *See*—
Oliver, Connie J.; and Gleason, Edward Hinsdale, 3,711,436.

Glendinning, William B.; and Pharo, Wellington B., to United States of America, Army. Method of forming a diffusion mask barrier on a silicon substrate. 3,711,324, Cl. 117-201.000.

Glick, Leo L.: *See*—
Witte, Bruce J., 3,711,022.

Gmeiner, Gunter; and Grabner, Christian, to Daimler-Benz Aktiengesellschaft. Seat-adjusting mechanism, especially for vehicle seats. 3,711,056, Cl. 248-429.000.

Go Luggage Corporation: *See*—
Guard, Edward J.; and Oliver, Robert F., 3,710,901.

Goettl, Adam D. Elgongated inflatable seal and containment devices for use sealing joints between perpendicularly disposed structural members and coplanar structural members. 3,710,401, Cl. 4-172.190.

Goetz, Fay M. Pipe cutting machine. 3,711,076, Cl. 266-23.0nn.

Goetze, Walter; Kasper, Werner; Klatt, Gerhard; and Schulz, Gerhard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of 2-mercaptoethanol. 3,710,439, Cl. 260-609.00r.

Goldberg, Carl, to Goldberg, Carl, Models, Inc. One-piece clevis. 3,711,134, Cl. 287-100.000.

Goldberg, Carl, Models, Inc.: *See*—
Goldberg, Carl, 3,711,134.

Gomes, John M.; Pool, Danny L.; and Wong, Morton M., to United States of America, Interior. Recovery of metals by electrodeposition. 3,711,386, Cl. 204-64.00r.

Goodenough, Samuel H.; Brown, Ronald C.; and Roe, Benson B., to Cutter Laboratories, Inc. Method and device for manufacture of heart valve. 3,710,744, Cl. 112-262.000.

Goodman, Murray; and Wartman, Albert, to Sutures, Inc. Morpholineamide of α-cyanoacrylates and polymers thereof. 3,711,448, Cl. 260-78.40n.

Goodnight, Hershel: *See*—
Zink, John Smith; Goodnight, Hershel; and Reed, Robert D., 3,711,243.

Goodrich, B. F., Company, The: *See*—
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Csontos, Alan A., 3,711,452.

Goodson, Louis H.; and Jacobs, William B., to Insurance Institute for Highway Safety, The, mesne. Detection of organic vapor contaminants in air. 3,711,251, Cl. 23-232.00r.

Goodyear Aerospace Corporation: *See*—
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Goodyear Tire & Rubber Company, The: *See*—
Booher, Harold R., 3,711,163.

Gora, Viktor Epifanovich: *See*—
Funberg, Izrail Leibovich; Nikolaev, Petr Petrovich; Gora, Viktor Epifanovich; Gulenko, Nikolai Nikolaevich; Papko, Viktor Ivanovich; Rozhkov, Nikolai Alexandrovich; Kats, Elya Isaevich; and Krutogolov, Grigory Vasilievich, 3,710,869.

Gore, William C.; and Shapiro, Eugene B., to Beatrice Foods Company. Clutch for use in the plumbing field. 3,710,591, Cl. 64-30.00r.

Goss, Garnet: *See*—
Dale, John R.; Holler, Roger A.; and Goss, Garnet, 3,711,821.

Gotham, Stanley T., to Cumberland Engineering Company, Inc. Granulator. 3,711,033, Cl. 241-47.000.

Gould Inc.: *See*—
Schiavone, Donald James, 3,711,623.

Gould Inc., mesne: *See*—
Brown, Arling Dix; and Blumenthal, John, 3,711,859.

Goyffon, Roland A., to Societe Mafit Manufacture de Fils Isoles Taurus. Apparatus for enameling wire. 3,710,756, Cl. 118-61.000.

Grabner, Christian: *See*—
Gmeiner, Gunter; and Grabner, Christian, 3,711,056.

Grace, W. R., & Co.: *See*—
Stahly, Eldon E.; and Lard, Edwin W., 3,711,572.

Grace, W. R., & Company: *See*—
Shah, Navin, 3,711,432.

Graf, Robert E.: *See*—
Robinson, Charles C.; Graf, Robert E.; Young , Robert W.; and Sproul, Merrill F., 3,711,264.

Grafford, John G., to Rowe International Inc. Semi-automatic sequencing machine. 3,710,482, Cl. 29-203.00b.

Gramiger, Adrian; and Baumann, Willy. Block action for sporting guns dropping breech. 3,710,493, Cl. 42-23.000.

Granatek, Alphones Peter: *See*—
Kaplan, Murray A.; and Granatek, Alphones Peter, 3,711,471.

Grannis, Roland K., to Pacific Utilities Supply Co. Mechanical load limiter for power lines. 3,711,049, Cl. 248-64.000.

Grant, Charles H., to Dow Chemical Company, The. Method for creating underground cavities employing explosives. 3,710,718, Cl. 102-23.000.

Grate, Gilbert M.: *See*—
Davis, Donald A.; and Grate, Gilbert M., 3,711,174.

Graupner, Eberhard, to VEB Polygraph Leipzig Kombinat f. Polygraphiche Maschinen und Ausrustungen. Stirring apparatus for circulating color or ink in the colorchest of a printing machine. 3,710,714, Cl. 101-364.000.

Graves, Ralph L., to General Electric Company. Mercury button closure. 3,711,671, Cl. 200-221.000.

Gray Tool Company: *See*—
Holbert, Marvin L., Jr., 3,710,860.

Green, Philip S., to American Express Investment Company. Acoustic to optical image converter using an acoustic grating. 3,711,823, Cl. 340-5.00i.

Greenwood, Derek: *See*—
Ayres, Douglas John; and Greenwood, Derek, 3,711,409.

Gregory, Frederick S., to Aeropet, Inc. Animal shipping crate. 3,710,761, Cl. 119-19.000.

Gremillion, Gerard S.; and McMillin, Bert M. Method of attaching a working implement to a back hoe bucket. 3,710,472, Cl. 29-148.300.

Grewe, Ferdinand: *See*—
Buchel, Karl Heinz; Grewe, Ferdinand; Scheinpflug, Hans; Kaspers, Helmut; and Regel, Erik, 3,711,502.
Widdig, Arno; Sasse, Klaus; Grewe, Ferdinand; Scheinpflug, Hans; Frohberger, Paul-Ernst; and Kaspers, Helmut, 3,711,503.

Griffith, James R., to United States of America, Navy. Method of impregnating inorganic filament strands. 3,711,351, Cl. 156-175.000.

Grile, Dwight: *See*—
Wendel, John S.; Kaiser, Lavern L.; and Grile, Dwight, 3,710,762.

Gritzner, Gerhard, to Dow Chemical Company, The. Oxidation step in electrolysis of aqueous HCl. 3,711,388, Cl. 204-128.000.

Groll, Manfred, to Farbenfabriken Bayer Aktiengesellschaft. Phthalocyanine dyestuffs. 3,711,508, Cl. 260-314.500.

Gronauer, Charles. Keyhole light. 3,711,694, Cl. 240-2.130.

Grosseau, Albert, to Societe Anonyme Automobiles Citroen. Tools for rough finishing and honing bores. 3,710,518, Cl. 51-338.000.

Grosslight and Pace: *See*—
Huffman, Russell B.; Baker, Stuart J.; Grosslight, Donald P.; and Pace, Aldren M., 3,711,750.

Grosslight, Donald P.: *See*—
Huffman, Russell B.; Baker, Stuart J.; Grosslight, Donald P.; and Pace, Aldren M., 3,711,750.

Grossner, Horst: *See*—
Steinbrenner, Hans; Elorus, Hans-Jorg; and Grossner, Horst, 3,711,162.

Groupement Atomique Alsacienne Atlantique G.A.A.A.: *See*—
Briot, Paul-Marie Henri, 3,711,144.

Gruber, Wolfgang: *See*—
Jaworek, Dieter; Gruber, Wolfgang; and Bergmeyer, Hans Ulrich, 3,711,574.

Gruenfeld, Norbert, to Ciba-Geigy Corporation. Derivatives of 5H-dibenz(b,f)azepine-4-carboxylic acids in a method and compositions for treating inflammation. 3,711,612, Cl. 424-244.000.

Grundman, Roger V., to Minnesota Mining and Manufacturing Company. Torque transmitting device. 3,710,905, Cl. 192-46.000.

Grunewald, Gerhard W.; and Hochgesand, Gerhard, to Metallgesellschaft Aktiengesellschaft. Process for the removal of hydrogen sulfide and carbon dioxide from fuel gases and synthesis gases. 3,710,546, Cl. 55-42.000.

Grygierczyk, Franciszek; and Falkowski, Zygmunt, to Fabryka Sprzetu Elektrotechnicznego 'Kontakt'. Multiple-spindle arrangement for tapping holes in small workpieces, nuts in particular. 3,711,213, Cl. 408-43.000.

Gryzlov, Anatoly Grigorievich: *See—*
Turetsky, Lazar Isaakovich; Gryzlov, Anatoly Grigorievich; Proskurovsky, Filipp Yakovlevich; Lomachenko, Gennady Nikolaevich; and Ageev, Nikolai Ivanovich, 3,710,821.

GTE Sylvania Incorporated: *See—*
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Torsch, Charles Edward, 3,711,802.
Tulk, Alexander Stuart; Douglas, Alan David; and Ericson, Ivan L., 3,711,205.
Westlund, Arnold E., Jr.; and Audesse, Emery G., 3,711,700.

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Sturlese, Stefano; Guaglia, Giovanni Battista; and Morello, Bartolomeo, 3,711,201.

Guard, Edward J.; and Oliver, Robert F., to Go Luggage Corporation. Knock down luggage. 3,710,901, Cl. 190-41.00r.

Gueorguiev, Zdravko Marinov: *See—*
Stoytenev, Stoyteno Grigorov; Stoilov, Gueorgui Kirilov; Tsanev, Tsani Konstantinov; Gueorguiev, Zdravko Marinov; and Stoyanov, Gueorgui Yordanov, 3,710,967.

Guerci, Carlo: *See—*
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Guerin, Frank: *See—*
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Guerrieri, Franco: *See—*
Montino, Franco; and Guerrieri, Franco, 3,711,274.

Gugler, Victor F. Apparatus for folding dough. 3,710,731, Cl. 107-57.00r.

Guglielmetti, Leonardo: *See—*
Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,711,472.

Gugliotta, Emanuele: *See—*
Scarfi, Alberto; Gugliotta, Emanuele; and Giudice, Aldo, 3,711,597.

Guidi, Justin J.; and Middleton, Charles F., Jr., to Digital Security Systems, Inc. Currency dispenser. 3,710,976, Cl. 221-67.000.

Guidi, Vinicio, to Cantiere Navaltecnica, S.p.A. Device for hydrofoil crafts suitable to remove from the beginning the transversal listing moments. 3,710,747, Cl. 114-66.50h.

Gulenko, Nikolai Nikolaevich: *See—*
Funberg, Izrail Leibovich; Nikolaev, Petr Petrovich; Gora, Viktor Epifanovich; Gulenko, Nikolai Nikolaevich; Papko, Viktor Ivanovich; Rozhkov, Nikolai Alexandrovich; Kats, Elya Isaevich; and Krutogolov, Grigory Vasilievich, 3,710,869.

Gulf Research & Development Company: *See—*
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Gulf Research and Development Company: *See—*
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Gummiwerk Pass & Sohn: *See—*
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Gunther, Ewald: *See—*
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Gunther, Klaus; Schneck, Erich; Voigt, Hartmut; and Wesselborg, Karlheinrich, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the separation of impurities from crude gas. 3,710,545, Cl. 55-29.000.

Gurney, William A., to Dunlop Holdings Limited. Safety device. 3,711,259, Cl. 48-192.000.

Gutmann, Hugo: *See—*
Bollag, Werner; Gutmann, Hugo; Hegedus, Balthasar; Kaiser, Ado; Langemann, Albert; Muller, Marcel; and Zeller, Paul, 3,711,543.

Habecker, John W., to Cherry Electrical Products Corporation. Encapsulated magnetic proximity switch. 3,711,799, Cl. 335-188.000.

Hack, Helmuth: *See—*
Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, 3,711,582.

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Hage, Carl H., to General Fireproofing Company, The. Drawer divider. 3,710,974, Cl. 220-22.400.

Hagino, Michiyoshi: *See—*
Higuchi, Shizuo; and Hagino, Michiyoshi, 3,711,147.

Hakanson, Nils L., to Plastic Coating Corporation, The. Web handling apparatus. 3,710,755, Cl. 118-33.000.

Hakansson, Andres Borje: *See—*
Abelin, Rudolf; Johansson, Nils Soren Lennart; and Hakansson, Andres Borje, 3,710,678.

Halcon International, Inc.: *See—*
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Hammond, Jack; and Boyd, Charles L., 3,710,622.
Keeney, Billy R., 3,711,249.

Hallock, Robert L. Hollow sheet metal nail. 3,710,672, Cl. 85-11.000.

Halverson, Paul G.; and Iozzi, Anthony J., to Thomas & Betts, Corporation, mesne. Cable stripping tool. 3,710,654, Cl. 81-9.50r.

Hamac-Hansella GmbH: *See—*
Toss, Franco, 3,710,543.

Hamano, Toyosaburo: *See—*
Murakami, Tadashi; Hiromoto, Takeshi; Soejima, Zenzo; Hamano, Toyosaburo; Hashimoto, Shinsuke; and Shibamoto, Shingo, 3,710,843.

Hamill, Robert L.; Haney, Michael E., Jr.; and Hoehn, Marvin M., to Lilly, Eli, and Company. Antibiotic A150A. 3,711,605, Cl. 424-122.000.

Hamilton, Robert S.; Kingsbury, Albert W.; and Anderson, John R., to Sybron Corporation. Regeneration method for dual beds of ion exchange resins. 3,711,401, Cl. 210-34.000.

Hamilton, Robert W., to Searle, G. D., & Co. Dialkylaminoalkyl esters of 6-chloro-1,2,3,4-tetra hydro-1-naphthaleneacetic acid and delta 1 analogs. 3,711,533, Cl. 260-469.000.

Hamisch, Paul H., Sr., to Monarch Marking System Company, The. Re-price marking method and record member. 3,711,683, Cl. 235-61.12n.

Hamiter, Leon C.: *See—*
Villella, Felminio; and Hamiter, Leon C., 3,711,728.

Hammer, Clarence Frederick; and Keller, Philip Joseph, to Du Pont de Nemours, E. I., and Company. Stable aqueous dispersions of ethylene-aminoalkyl acrylate copolymers. 3,711,435, Cl. 260-29.6hn.

Hammer, Ivan E.; and Hammer, Waldemar. Power driven shaper apparatus. 3,710,833, Cl. 144-134.00a.

Hammer, Waldemar: *See—*
Hammer, Ivan E.; and Hammer, Waldemar, 3,710,833.

Hammond, Jack; and Boyd, Charles L., to Halliburton Company. Viscosity compensated dual rotor turbine flowmeter. 3,710,622, Cl. 73-231.00r.

Hammond, Philip G., to Kimberly-Clark Corporation. Method and carton for imparting fragrance to carton contents. 3,711,024, Cl. 239-55.000.

Hamren, Fred W., Jr.: *See—*
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Hamrick, James Saunders, to Mc Murtrie & Hamrick Enterprises. Hair piece liner. 3,710,452, Cl. 34-95.000.

Hanaas, Torgeir, to Institutet for Mikrovagsteknik. Device for an accurate adjustment of two apparatus parts displaceable relatively to each other. 3,710,686, Cl. 91-3.000.

Hanes, James W. E.; Larralde, Edward; and Rimmer, Michael J., to Vetco Offshore Industries, Inc. Apparatus for remotely connecting and disconnecting pipe lines to and from a submerged wellhead. 3,710,859, Cl. 166-.600.

Haney, Michael E., Jr.: *See—*
Hamill, Robert L.; Haney, Michael E., Jr.; and Hoehn, Marvin M., 3,711,605.

Hanschke, Ernst, and: *See—*
Fester, Walter,; Hanschke, Ernst, and; and Jakob, Franz, 3,711,447.

Hansen, Donald H. Automatic exposure control for controlling photographic shutter. 3,711,721, Cl. 250-214.00p.

Hansen, John V. E.; and Hauck, Eldon W., to Norton Company. Armored ejection seat. 3,710,682, Cl. 89-36.00z.

Hansen, Joseph D.: *See—*
Davis, Thomas L.; and Hansen, Joseph D., 3,710,716.

Hansen, Quinten A. Self-cooling clutch and brake. 3,710,902, Cl. 192-18.00a.

Hanson, Ellis P.; and Sausele, George J. H., to Compugraphic Corporation. Font strip structure. 3,710,707, Cl. 95-85.000.

Hansson, Hans Olof, to Telefonaktiebolaget L M Ericsson. Sleeve joint for aluminium sheathed cable. 3,711,628, Cl. 174-71.00r.

Hara, Atsushi; Naganuma, Hisao; and Takai, Akio, to Nippon Kokan Kabushiki Kaisha. Coupling for milli-wave guiding tube. 3,711,126, Cl. 285-116.000.

Hara, Yoshiaki: *See—*
Shiraki, Hiroshi; Hara, Yoshiaki; and Iguchi, Masaaki, 3,710,810.

Hardtmann, Goetz E. 6-Aryl-imidazo(2,1-a)phthalazines. 3,711,481, Cl. 260-250.00a.

Hardy, Frederick Edward: *See—*
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Harnden, John D., Jr.: *See—*
Tasca, Dante M.; Harnden, John D., Jr.; and Martzloff, Francois D., 3,711,794.

Harnden, John D., Jr., to General Electric Company. Switch with surge protection. 3,711,668, Cl. 200-166.00c.

Harnischfeger Corporation: *See—*
Moody, John K., 3,710,897.

Harper, Lee R.: *See—*
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Harris, Charles V.: *See—*
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Harris, Dale K.; and Soulier, Louis R., to Cities Service Company. Bag hanger. 3,710,559, Cl. 55-341.000.

Hart, Charles H.; and Cashau, George R., to American Newspaper Publishers Association Research Institute, Incorporated. Apparatus for separating a bundle of plural sheets. 3,711,084, Cl. 270-57.000.

Hartig, Rufus. Recovery of hydrogen fluoride. 3,711,596, Cl. 423-483.000.

Hartley, Ezra D. Pumping system. 3,711,222, Cl. 417-44.000.

Hasenbalg, Ralph D., to Vector General, Inc. Character font generating system for cathode-ray tube displays, or the like. 3,711,849, Cl. 340-324.00a.

Hashimoto, Shinsuke: *See—*
Murakami, Tadashi; Hiromoto, Takeshi; Soejima, Zenzo; Hamano, Toyosaburo; Hashimoto, Shinsuke; and Shibamoto, Shingo, 3,710,843.

Hashimura, Tetsuo: *See—*
Takeda, Sadao; Mitsudome, Kaoru; and Hashimura, Tetsuo, 3,711,673.

Hatton, Mark W. C., to Twyford Laboratories Limited. Coagulants. 3,711,376, Cl. 195-62.000.

Hattori, Tadashi: *See—*
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Hauck, Eldon W.: *See—*
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Hauptman, Maria: *See—*
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Weber, Karl-Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,711,470.

Hauptmann, Maria: *See—*
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Hauser, Ray L., to Hauser Research and Engineering Co. Method of treating human skin with a composition for electromedical applications. 3,710,782, Cl. 128-2.06e.

Hauser Research and Engineering Co.: *See—*
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Hawker Siddeley Aviation Limited: *See—*
Cameron-Johnson, Alan, 3,711,043.

Hawkins, Robert L. Vehicle acceleration and deceleration indicator. 3,711,828, Cl. 340-66.000.

Hawley, Robert L., to Ralston Purina Company. Roll centering method and apparatus. 3,711,304, Cl. 99-360.000.

Hayashi, Isao: *See—*
Nagano, Toshihiro; Suzuki, Matsuo; Hayashi, Isao; Kato, Takashi; Mochizuki, Hiroshi; Aoshima, Yasuo; Shibata, Kouji; and Takahashi, Toshiro, 3,711,313.

Hayashi, Toshihiko: *See—*
Kuzuya, Takashi; Hayashi, Toshihiko; and Fukaya, Shigeo, 3,711,009.

Hayashi, Yoshimasa. Control system for a vehicle air-conditioner. 3,710,587, Cl. 62-230.000.

Hays, Jerry L.: *See—*
Buchholz, Hugh L.; and Hays, Jerry L., 3,710,726.

Haytayan, Harry M.: *See—*
Clifford, Paul R.; and Haytayan, Harry M., 3,711,008.

Hazard, Richard; and King, John, to Fishons Limited. Bis (2-carboxy-1-thiachromonyl and yloxy) compounds. 3,710,459, Cl. 26-327.0th.

Heap, Vernon; and Rothwell, Eric, to Allied Colloids Manufacturing Company Limited. Textile size. 3,711,323, Cl. 117-138.80f.

Hebden, Billy, to Silentnight Limited. Self locking elements. 3,711,051, Cl. 248-188.000.

Heckler & Kock GmbH: *See—*
Ziegler, Norbert; and Schefold, Elmar, 3,710,495.

Hede, Nils Erik Allan: *See—*
Hellner, Lars Ivar; and Hede, Nils Erik Allan, 3,711,276.

Heehler, Arthur C.; and Taylor, George J., to Mercor Corporation. Locomotive warning horn. 3,710,752, Cl. 116-142.0fp.

Heerdt, Ruth: *See—*
Hubner, Manfred; Heerdt, Ruth; Schmidt, Felix Helmut; Stach, Kurt; and Aumuller, Walter, 3,711,564.

Hegar, Gert, to Ciba Geigy AG. Azo dyestuffs containing a spiropiperazino cyclic ring. 3,711,459, Cl. 260-146.00d.

Hegedus, Balthasar: *See—*
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Heidemann, Gerrit: *See—*
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Heijnen, Alphonsus Jozephus Cornelus; and Van Oorschot, Hendrikus Wilhelms Antonius, to U.S. Philips Corporation. High-frequency coil having a synthetic resin base. 3,711,805, Cl. 336-65.000.

Heimann, Ewald: *See—*
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Heinemeyer, Ben W.: *See—*
Smith, Vernon J.; and Heinemeyer, Ben W., 3,710,616.

Heinrich, Willy; and Strom, Ludwig, to Woma-Apparatebau Wolfgang Maasberg & Co. GmbH. Apparatus for the cleaning of conduits and containers and method of operating same. 3,711,026, Cl. 239-227.000.

Heinroth, Karl-August: *See—*
Schnegg, Robert; Heinroth, Karl-August; Neumann, Herbert; Dauscher, Rudi; Ohse, Helmut; and Nickel, Klaus, 3,710,565.

Heinz, Karl; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz; deceased (by Hauptmann, Maria), said Weber, said Zeile, said Danneberg and said Giesemann assors. to Boehringer Ingelheim G.m.b.H. 5-Phenyl-1H-1,5-benzodiazepine-2,4-(3,5H)-diones. 3,711,509, Cl. 260-239.30b.

Heise, Rudolf, to Siemens Aktiengesellschaft. Circuit arrangement for connecting a plurality of frequency multiplier stages to a common fundamental frequency generator. 3,711,784, Cl. 331-53.000.

Heiser, James L., to Park-Ohio Industries, Inc. Checking and sorting device. 3,710,935, Cl. 209-73.000.

Heitzinger, Kent A. Skier's brace. 3,710,484, Cl. 36-1.500.

Hekimian Laboratories, Inc.: *See—*
Hekimian, Norris C.; and Kelly, John L., 3,711,773.

Hekimian, Norris C.; and Kelly, John L., to Hekimian Laboratories, Inc. Phase jitter meter. 3,711,773, Cl. 324-83.00r.

Hellner, Lars Ivar; and Hede, Nils Erik Allan, to Aktiebolaget Bofors. Non-magnetic barrel steel. 3,711,276, Cl. 75-128.00a.

Helmer, Josef, to Daimler-Benz Aktiengesellschaft. Brake band guide structure for brake bands in automatic transmission. 3,710,643, Cl. 74-606.00r.

Hendershot, Richard L.: *See—*
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Henderson, Donald LeRoy, to Deere & Company. Hydraulic steering system. 3,710,689, Cl. 91-388.000.

Hengelhaupt, Hans-George: *See—*
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Henger, Gary W.: *See—*
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Hengesbach, Robert W. Spray device. 3,711,028, Cl. 239-288.500.

Henkel & Cie G.m.b.H.: *See—*
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Hennart, Claude. Stabilized iron chelates and plant treating agents containing the same. 3,711,525, Cl. 260-439.00r.

Hennessy Products, Incorporated: *See—*
Kirwan, George B., 3,711,118.

Henry, Nelson R., to Woodman Company, Inc., The. Rotary volumetric dispensing apparatus. 3,710,980, Cl. 222-64.000.

Henry, Ralph E., to Dresser Industries, Inc. Seal assembly. 3,711,104, Cl. 277-58.000.

Henschen, Homer Ernst: *See—*
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Hentz, Ronald D.; and Henger, Gary W., to Inland Steel Company. Method for heating unfinished tellurium-containing steel articles before hot rolling. 3,710,608, Cl. 72-38.000.

Hentzschel, Hanspeter, to Texas Instruments, Incorporated. Activation process for electroless nickel plating. 3,711,325, Cl. 117-212.000.

Herbstman, Sheldon: *See—*
Estes, John H.; Herbstman, Sheldon; and Kravitz, Stanley, 3,711,566.

Hercules Incorporated: *See—*
Brack, Karl, 3,711,446.
Witzel, John, III, 3,711,350.

Herman, Alva L.; deceased (by Herman, Florence Royce; executrix), to Du Pont de Nemours, E. I., and Company. Method of making a composite structure of an aromatic polyimide resin and novolak phenolic resin. 3,711,356, Cl. 156-306.000.

Herman, Florence Royce: *See—*
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Herr, John H.: *See—*
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Herschler, Robert John, to Crown Zellerbach Corporation. Compositions for topical application for enhancing tissue penetration of physiologically active agents with DMSO. 3,711,602, Cl. 424-45.000.

Herschler, Robert John, to Crown Zellerbach Corporation. Enhancing tissue penetration of physiologically active steroidal agents with DMSO. 3,711,606, Cl. 424-243.000.

Herud, Frank R., to Textron, Inc. Thrust chamber. 3,710,572, Cl. 60-204.000.

Hess, Howard V.: *See—*
Cole, Edward L.; and Hess, Howard V., 3,711,400.

Hess, Richard E. Light device. 3,711,698, Cl. 240-10.100.

Hesse, Reiner: *See—*
Engelhardt, Manfred; Fruhstorfer, Wolfgang; Hesse, Reiner; Dennler, Bernd; and Baumer, Wilhelm, 3,711,554.

Heusler, Karl; and Woodward, Robert Burns, to Ciba-Geigy Corporation. 1-Formyl-2 alpha-(2-acyloxy-2-propyl-mercapto)-3 alpha-N-acyl-amino-azctidin-4-ones and process for their preparation. 3,711,464, Cl. 260-239.00a.

Hewitt, Gordon Trent, to Colgate-Palmolive Company. High foaming antistatic detergent composition. 3,711,414, Cl. 252-118.000.

Hewlett, Colin; and Winnick, Charles N., to Halcon International, Inc. Preparation of beta-halogenopropionitriles. 3,711,532, Cl. 260-465.700.

Hewlett-Packard Company: *See—*
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Hezel, William J.; and Neubert, Robert J. Plumbing fittings. 3,711,128, Cl. 285-153.000.

Hibbert, Peter G.; and Lofland, Jerry C., to Du Pont de Nemours, E. I., and Company. Rapid drying polyvinyl alcohol color coating process. 3,711,321, Cl. 117-119.600.

Hideg, Laszlo; and Bishop, Irving N., to Ford Motor Company. High velocity carburetor idle system. 3,711,069, Cl. 261-41.00d.

Hidinger, David C., Jr.: *See—*

Uelzmann, Heinz; and Hidinger, David C., Jr., 3,711,466.
Hiestand, John H.: *See—*
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Stout, Thomas M.; Smith, Edward J.; and Hiestand, John H., 3,711,688.
Higuchi, Shizuo; and Hagino, Michiyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Drain apparatus for the body of a car. 3,711,147, Cl. 296-28.00r.
Higuchi, Takeru; and Leeper, Harold M., to Alza Corporation. Drug-delivery device with stretched, rate-controlling membrane. 3,710,795, Cl. 128-260.000.
Hikino, Tadashi: *See—*
Wada, Mitsuo; Mikoda, Masanari; Aoki, Masaki; and Hikino, Tadashi, 3,711,328.
Hilger, Ronald O., to Associated Mills, Inc. Massager. 3,710,785, Cl. 128-36.000.
Hill, Emmons F.; deceased (by Hill, Frank M.; administrator). Rotary furrowing tool. 3,710,871, Cl. 172-122.000.
Hill, Frank M.: *See—*
Hill, Emmons F., 3,710,871.
Hills, Richard E.; Adams, John H.; Anderson, Lloyd E., Jr.; Bliss, Woodrow E., Jr.; Hamren, Fred W., Jr.; Honath, Harry F.; and Murphy, John C., to Pittsburgh-Des Moines Steel Company. Unique subsea storage vessel and unique method of lowering same. 3,710,82, Cl. 61-46.500.
Hilti Aktiengesellschaft: *See—*
Imelmann, Wilfried; and Benedic, Siegfried, 3,711,217.
Hindin, Eugene, to Gindy Manufacturing Corporation. Liner arrangement for refrigerated trailers. 3,711,148, Cl. 296-28.00m.
Hines, Robert R.; and Culver, Harold, to Textron, Inc. Lens blocking machine. 3,710,849, Cl. 164-322.000.
Hippach, Wilburn L., to Bliss & Laughlin Industries, Incorporated. Portable extendible crane with work basket. 3,710,893, Cl. 182-2.000.
Hirakawa, Koichi: *See—*
Yamashita, Kazuo; Nakamura, Harutoki; and Hirakawa, Koichi, 3,711,807.
Hirakawa, Michio: *See—*
Susuki, Rinnosuke; Hoshi, Hiroshi; Saito, Jiro; and Hirakawa, Michio, 3,711,438.
Hirane, Seiichi: *See—*
Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, 3,711,582.
Hiromoto, Takeshi: *See—*
Murakami, Tadashi; Hiromoto, Takeshi; Soejima, Zenzo; Hamano, Toyosaburo; Hashimoto, Shinsuke; and Shibamoto, Shingo, 3,710,843.
Hirose Steel Industrial Co., Ltd.: *See—*
Inoue, Tamotsu, 3,710,578.
Hitachi Chemical Company, Ltd.: *See—*
Kakefuda, Koiti; Ito, Tatsuo; and Okano, Yasuyuki, 3,711,575.
Hitachi Electronics Company Limited: *See—*
Kaneko, Yoichi,; Fujiwara, Yukinari; Kimura, Katuhiro; and Kamimura, Masao, 3,711,792.
Hitachi, Ltd.: *See—*
Doi, Toshio; and Kudo, Mitsuhiro, 3,710,844.
Kaneko, Yoichi,; Fujiwara, Yukinari; Kimura, Katuhiro; and Kamimura, Masao, 3,711,792.
Muta, Akinori; Itoda, Gyozo; Noro, Takanobu; and Yamazaki, Chieko, 3,711,585.
Nakamura, Satoshi; and Umeda, Junichi, 3,711,740.
Yamazaki, Eiichi; and Kanai, Hiromi, 3,711,734.
Hivert, Andre R.; and Galmiche, Philippe M., to Office National d'Etudes et de Recherches Aerospatiales (par Abreviation O.N.E.R.A.). Methods for manufacture of sintering thin porous metallic sheets. 3,711,279, Cl. 75-222.000.
Hobart Manufacturing Company, The: *See—*
Burns, Richard H., 3,710,533.
Hochgesand, Gerhard: *See—*
Grunewald, Gerhard W.; and Hochgesand, Gerhard, 3,710,546.
Hodgman Manufacturing Company, Inc.: *See—*
Hodgman, Willis K., Jr., 3,710,813.
Hodgman, Willis K., Jr., to Hodgman Manufacturing Company, Inc. Pneumatic fire detection system for deluge valve. 3,710,813, Cl. 137-79.000.
Hoehn, Marvin M.: *See—*
Hamill, Robert L.; Haney, Michael E., Jr.; and Hoehn, Marvin M., 3,711,605.
Hof, Rainer, to Arn Jung Lockomotivfabrik GmbH. Machine tool. 3,710,660, Cl. 82-2.00d.
Hofbauer, Leo. Steering ski for snowmobiles and the like. 3,711,109, Cl. 280-28.000.
Hoff, Glenn A. Machine for applying liquid coating to articles. 3,710,758, Cl. 118-63.000.
Hoffman, Joseph K.; and Russell, James P., to Air Products and Chemicals, Inc., mesne. Telomers of vinyl esters and acetronitrile. 3,711,531, Cl. 260-465.400.
Hoffman, Kenneth C., to Westinghouse Electric Corporation. Support hanger for interior lighting fixture. 3,711,052, Cl. 248-201.000.
Hoffman, Ralph. Sink clamp. 3,711,173, Cl. 312-140.400.
Hoffmann, Rolf, to Didier-Werke AG. Rotary slide closure for liquid melt containers. 3,710,992, Cl. 222-554.000.
Hoffmann-La Roche Inc.: *See—*
Bollag, Werner; Gutmann, Hugo; Hegedus, Balthasar; Kaiser, Ado; Langemann, Albert; Muller, Marcel; and Zeller, Paul, 3,711,543.
Bunnell, Raymond Howard; and Guerin, Frank, 3,710,779.
Rosen, Perry, 3,711,522.
Schmid, Hans; and Zsindely, Janos, 3,711,553.
Hogan, Patrick J.; and Bolash, Philip, to Budd Company, The. Centering device for a chuck. 3,711,106, Cl. 279-123.000.
Hogue, Charles J., to Whale Enterprises, Inc. Ball rebounding means. 3,711,092, Cl. 273-26.00a.
Holbert, Marvin L., Jr., to Gray Tool Company. Petroleum well safety valve. 3,710,860, Cl. 166-75.000.
Holland, Raymond Prunty, Jr. Kites. 3,711,045, Cl. 244-153.00r.
Holler, Roger A.: *See—*
Dale, John R.; Holler, Roger A.; and Goss, Garnet, 3,711,821.
Hollinger, Paul, to Maryland Cup Corporation. Package for fragile nested articles and method for making same. 3,710,931, Cl. 206-65.00k.
Hollingsead, Robert A.; and Pryor, Clyde Robert, to Hollingsead-Pryor Enterprise, Inc. Avionic tray. 3,710,476, Cl. 29-200.ooj.
Hollingsead-Pryor Enterprise, Inc.: *See—*
Hollingsead, Robert A.; and Pryor, Clyde Robert, 3,710,476.
Hollingsworth, Alan L. Suspension means for mud flaps. 3,711,119, Cl. 280-154.50r.
Hollowell, John R. Vacuum trash collector. 3,710,412, Cl. 15-340.000.
Holmberg, Roland Bengt; and Petersson, Ralf Krister Ebbe, to Kalmar Verkstadsaktiebolag. Coupling mechanisms for tractor semi-trailer vehicle combinations having connecting means for the electrical, pneumatical and/or hydraulical service lines from the trators to the semi-trailers. 3,711,122, Cl. 280-421.000.
Holmes, Robert W.: *See—*
Dey, Arabinda N.; and Holmes, Robert W., 3,711,334.
Holobeam, Inc.: *See—*
Schlisser, Gabor; and Insler, Julius R., 3,711,846.
Holtschmidt, Hans: *See—*
Zumach, Gerhard; Holtschmidt, Hans; and Kuhle, Engelbert, 3,711,491.
Honath, Harry F.: *See—*
Hills, Richard E.; Adams, John H.; Anderson, Lloyd E., Jr.; Bliss, Woodrow E., Jr.; Hamren, Fred W., Jr.; Honath, Harry F.; and Murphy, John C., 3,710,582.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Higuchi, Shizuo; and Hagino, Michiyoshi, 3,711,147.
Honegg, Adolf: *See—*
Bandel, Kurt; Bartle, Walter; Gunther, Ewald; Honegg, Adolf; and Stahl, Heinz, 3,711,155.
Honeywell Inc.: *See—*
Medlar, Lewis A., 3,711,860.
Honeywell Information Systems, Inc.: *See—*
Bloom, Delwin W., 3,711,863.
Dahl, James N., 3,711,693.
Kefalas, John H., 3,711,838.
Hoofnagle, Wayne E., to United States of America, Army, mesne. Volute spring stabilizer. 3,710,715, Cl. 102-4.000.
Hook, Edwin O.; and Nichols, Larry D., to Moleculon Research Corporation. Process for treating polymeric substrates with high-energy radiation. 3,711,389, Cl. 204-159.120.
Hook, Edwin O.; Berbeco, George R.; and Obermayer, Arthur S., to Moleculon Research Corporation. N-methylol phosphazene compounds. 3,711,542, Cl. 260-551.00p.
Hooker Chemical Corporation: *See—*
Carlson, Richard D.; and Dever, James L., 3,711,563.
Maul, James J.; Stevens, James E.; and Schendel, Ronald L., 3,711,562.
Hopping, William J., to Champion International Corporation. Method and/or apparatus for continuous production of 4-plywood. 3,710,760, Cl. 118-227.000.
Horton, Herbert D. Portable automatic pipe testing machine. 3,710,628, Cl. 73-49.500.
Hoshi, Hiroshi: *See—*
Susuki, Rinnosuke; Hoshi, Hiroshi; Saito, Jiro; and Hirakawa, Michio, 3,711,438.
Hoshino, Yoshio: *See—*
Ito, Takuji; and Hoshino, Yoshio, 3,711,429.
Hostynek, Juraj J.; and Collins, David J., to Dow Chemical Company, The. Frothing agents for the floatation of ores. 3,710,939, Cl. 209-166.000.
Houseman, Paul S., to Bendix Corporation, The. Brake failure warning system. 3,711,827, Cl. 340-52.00b.
Howe, Spencer D.: *See—*
Barhydt, Hamilton; and Howe, Spencer D., 3,711,046.
Howell, Rubie Nell Little: *See—*
Cummins, W. Wayne, 3,711,677.
Howlett, Arthur George. Templates. 3,710,447, Cl. 33-194.000.
Huang, Ching Yun; and Maeno, Tamostu, to Japan Gas-Chemical Company, Inc. Process for the preparation of aromatic glycols. 3,711,558, Cl. 260-618.00r.
Hubbell, Franklin R., III, to Tenneco Inc. Transverse tuning tube. 3,710,892, Cl. 181-54.000.
Hubbuch, Theodore N.; Murfree, James A., Jr.; Duncan, William A.; Sandlin, Billy J.; and Nappier, Henry A., to United States of America, Army. Hydrazine monopropellant process using a gas generating bed. 3,710,573, Cl. 60-218.000.

Hubner, Manfred; Heerdt, Ruth; Schmidt, Felix Helmut; Stach, Kurt; and Aumuller, Walter, to Boehringer Mannheim G.m.b.H. Novel sulfonylaminopyrimidines and compositions containing them. 3,711,564, Cl. 260-256.50r.

Huffman, Russell B.; Baker, Stuart J.; Grosslight, Donald P.; and Pace, Aldren M., 1/3 jointly to said Huffman and Baker and 1/3 each to said Grosslight and Pace. Dynamic anhysteretic demagnetization apparatus having pole faces perpendicular to the rotatioal axis. 3,711,750, Cl. 317-157.500.

Hughes, Michael James, to Girling Limited. Drum-type brake. 3,710,898, Cl. 188-79.5gt.

Hume, Frederick R.; and Seaton, Jack B., to North American Rockwell Corporation. Radio-frequency power testing equipment. 3,711,771, Cl. 324-57.00r.

Humphrey, William E., to Optical Research and Development Corporation. Mirror stabilizer having space referenced motion. 3,711,178, Cl. 350-16.000.

Hunter, John P., Jr.; and George, Erie, to Oxford Industries, Inc. System of making waistbands with crimped belt loops, labels and tickets. 3,710,398, Cl. 2-236.000.

Hurst, Fred J.; and Crouse, David J., to United States of America, Atomic Energy Commission. Reductive stripping process for the recovery of uranium from wet-process phosphoric acid. 3,711,591, Cl. 423-10.000.

Hurst, Herbert N. Ossicle replacement prosthesis. 3,710,399, Cl. 3-1.000.

Hurst Performance Inc.: *See—*
Mc Junkin, Howard P., Jr., 3,711,079.

Husted, Royce Hill: *See—*
Thompson, Richard F., 3,710,881.

Hutchison, James Moffat: *See—*
Williamson, David T. N.; Hutchison, James Moffat; and Wilson, Kenneth C., 3,710,466.

Hutchison, Stanley O., to Chevron Research Company. Apparatus for handling well elements. 3,710,954, Cl. 214-2.500.

Huthcins, Thomas B., IV; and Edwards, Miles Lowell. Catheter tip pressure transducer. 3,710,781, Cl. 128-2.05d.

Huttenwerk Oberhausen A.G.: *See—*
Von Bogdandy, Ludwig; Richter, Helmut; and Forster, Eckerhard, 3,711,277.

Hutton, Larry D.: *See—*
Morris, Gerald H., Jr., 3,710,392.

Huynh, Chanh: *See—*
Martel, Jacques; and Huynh, Chanh, 3,711,555.

Hwa, Jesse C. H., to Stauffer Chemical Company. Polymercaptan modified vinyl halide polymers and blends thereof with vinyl halide polymer. 3,711,576, Cl. 260-899.000.

Hycel, Inc.: *See—*
Moran, John Joseph, 3,711,206.

Hydro Tech Services, Inc.: *See—*
Arnold, James F., 3,711,123.

Hyytinen, Timo, to Valmet Oy. Ejector mechanism for breakdown firearms. 3,710,494, Cl. 42-47.000.

I.D. Engineering, Inc.: *See—*
Martens, Henry J., 3,711,848.

Iguchi, Masaaki: *See—*
Shiraki, Hiroshi; Hara, Yoshiaki; and Iguchi, Masaaki, 3,710,810.

Illinois Tool Works Inc.: *See—*
Rapata, George M., 3,711,145.

Imai, Jun: *See—*
Irikura, Tsutomu; and Imai, Jun, 3,711,319.

Imelmann, Wilfried; and Benedic, Siegfried, to Hilti Aktiengesellschaft. Drill with a hard metal insert. 3,711,217, Cl. 408-226.000.

Imeson, James G.; deceased (by Lucas, Joyce Imeson; executrix). Irrigation system. 3,710,818, Cl. 137-344.000.

Imperial Chemical Industries Limited: *See—*
George, Edwin Francis; and Davidson, Alan John, 3,711,493.
Robinson, Derek Gilbert, 3,710,462.

Imperial Oil Limited: *See—*
Jones, Gerald D., 3,711,030.

Inami, Tetsuzo; and Takizawa, Yoshiyuki, to Canon Kabushiki Kaisha and Canon Denshi Kabushiki Kaisha. Core-magnet type instrument having linear response characteristic. 3,711,776, Cl. 324-151.00a.

Incentive Research & Development AB: *See—*
Caspersson, Torbjorn Oskar; and Lomakka, Gosta Mattias, 3,711,209.

Industrial Filter & Pump Mfg. Co.: *See—*
Zievers, James F., 3,711,329.

Industriele Onderneming Wavin N.V.: *See—*
Gerholt, Willem; and Heidemann, Gerrit, 3,711,124.
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Inflat-A-Industries, Inc.: *See—*
Cherry, Nancy Rey; and Shackelford, Judith Ann, 3,710,994.

Ingersoll-Rand Company: *See—*
Palmer, William E.; and Jones, William E., 3,710,856.
Seccombe, Robert J.; Pyper, Paul M.; and Treible, Edwin S., Jr., 3,710,874.

Inland Steel Company: *See—*
Hentz, Ronald D.; and Henger, Gary W., 3,710,608.

Inmont Corporation: *See—*
Loew, Frederic Christian, 3,711,439.

Innes, John Edwin, to American Cyanamid Company. Bis-triphenylenes and use in photochromic and luminescent compositions. 3,711,567, Cl. 260-668.00f.

Innes, Robert; and Morrison, Ernest Albert, to Roland Trist Controls Limited. Float operated signalling device. 3,710,612, Cl. 73-1.00r.

Innes, Robert; and Morrison, Ernest Albert, to Roland Trist Controls Limited. Float operated signalling device. 3,710,613, Cl. 73-1.00r.

Inoue, Hiroyuki: *See—*
Tamaru, Hiroshi; and Inoue, Hiroyuki, 3,710,634.

Inoue, Isaburo: *See—*
Sakamoto, Kenro; Endo, Takaya; Iwama, Masakuni; Inoue, Isaburo; and Takei, Yutaka, 3,711,286.

Inoue, Tamotsu, to Hirose Steel Industrial Co., Ltd. Method for constructing frame for retaining earth. 3,710,578, Cl. 61-41.00r.

Insler, Julius R.: *See—*
Schlisser, Gabor; and Insler, Julius R., 3,711,846.

Institut Elektrosvarki Imeni E. O. Patona Akademii Nauk Ukrainskoi SSR: *See—*
Raevsky, Georgy Vladimirovich; Biletsky, Semen Mikhailovich; and Burmenko, Eduard Jurievich, 3,711,075.

Institut Elektrosvarki Imeni E.O. Patona Akademii Nauk Ukrainskoi SSR: *See—*
Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Dubinsky, Rudolf Solomonovich; Latash, Jury Vadimovich; Emelyanenko, July Georgievich; and Baglai, Vitaly Mikhailovich, 3,711,616.

Institut Francais du Petrole des Carburants et Lubrifiants: *See—*
Reynard, Remi; Tindy, Roger; and Daniel, Edmond, 3,711,000.

Institute of Gas Technology: *See—*
Matthews, Charles W., 3,711,258.

Institutet for Mikrovagsteknik: *See—*
Hanaas, Torgeir, 3,710,686.

Instrumentation Specialties Company: *See—*
Allington, Robert W., 3,711,779.

Insurance Institute for Highway Safety, The, mesne: *See—*
Goodson, Louis H.; and Jacobs, William B., 3,711,251.

International Business Machines Corporation: *See—*
Aycock, Thomas W.; and Wright, John J., 3,711,428.
Bernardo, Edward T.; Cherochak, Joseph G.; and Sipel, Richard G., 3,710,479.
Breitenbach, Richard C.; Edstrom, Gene H.; and Keffeler, James R., 3,711,691.
Cachon, Rene P., 3,711,081.
Conant, Robert K.; and Finke, William H., 3,710,702.
Irwin, John W., 3,711,844.
Joshi, Kailash C.; and Lee, Franklin F. M., 3,711,341.
Kroft, John D.; Pawletko, Joseph P.; Peters, Francis E.; and Yount, Carl T., 3,711,804.
Lawhead, Robert E.; and Steele, William E., 3,711,359.
Max, Erhard; and Rogalla, Dietrich, 3,710,438.
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International Flavors & Fragrances Inc.: *See—*
Mookherjee, Braja D.; Giacini, Christopher; Karoll, Elizabeth A.; and Vock, Manfred H., 3,711,482.

International Microwave Corporation: *See—*
Chasek, Norman E., 3,711,845.

International Paper Company: *See—*
Wagers, William O.; Frappier, Robert H.; McDonald, William S.; and Boggs, Charles L., 3,711,352.

International Paper Company, mesne: *See—*
Lee, Charles A.; and Furbeck, Warren R., 3,710,536.

International Stretch Products, Inc.: *See—*
Sarmiento, Louis, 3,710,599.

International Telephone and Telegraph Corporation: *See—*
Morgan, Thomas Edward; Kaminski, George Frank; and Mraz, Francis J., 3,710,483.
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Intertechnique S.A.: *See—*
Giraud, Pierre; and Redon, Michel, 3,711,851.

Inventa AG: *See—*
Lussi, Heinz; and Torre, Hans Dalla, 3,711,465.

Iozzi, Anthony J.: *See—*
Halverson, Paul G.; and Iozzi, Anthony J., 3,710,654.

Irie, Namio: *See—*
Marumo, Nagayuki; and Irie, Namio, 3,710,651.

Irikura, Tsutomu; and Imai, Jun, to Kyorin Seiyaku Kabushiki Kaisha. Coating of particles or powders. 3,711,319, Cl. 117-100.00a.

Irvin Industries Inc.: *See—*
Gavagan, James A., 3,710,426.

Irwin, Henry D. One-piece slipper. 3,710,485, Cl. 36-11.000.

Irwin, John W., to International Business Machines Corporation. Updatable magnetic records. 3,711,844, Cl. 340-174.10b.

Ishida, Kazuyuki: *See—*
Kamiyama, Akira; Kikuchi, Koichi; and Ishida, Kazuyuki, 3,711,808.

Ishigo, Hideyasu: *See—*
Niioka, Takeharu; Itoh, Noriji; and Ishigo, Hideyasu, 3,711,657.

Ishiguro, Yasuo, to Kabushiki Kaisha Koparu. Automatic diaphragm control apparatus for image tube. 3,711,644, Cl. 178-7.920.

Ishii, Masaaki: *See—*
Yoshikawa, Minoru; and Ishii, Masaaki, 3,711,654.

Ishiwata, Mamoru: *See—*
Yoshida, Kazutaka; and Ishiwata, Mamoru, 3,711,312.

Itek Corporation: *See—*
Berman, Elliot; and Ekman, Carl F. W., 3,711,282.

Ito, Osamu: *See*—
Sumiyoshi, Masaharu; Sakakibara, Shigeru; Ito, Osamu; Wakamatsu, Hisato; and Kato, Takaaki, 3,710,630.
Sumiyoshi, Masaharu; Sakakibara, Shigeru; Ito, Osamu; and Wakamatsu, Hisato, 3,710,648.

Ito, Takuji; and Hoshino, Yoshio, to Tokyo Institute of Technology. Arsonium and stibonium anion exchangers. 3,711,429, Cl. 260-2.10e.

Ito, Tatsuo: *See*—
Kakefuda, Koiti; Ito, Tatsuo; and Okano, Yasuyuki, 3,711,575.

Itoda, Gyozo: *See*—
Muta, Akinori; Itoda, Gyozo; Noro, Takanobu; and Yamazaki, Chieko, 3,711,585.

Itoh, Noriji: *See*—
Niioka, Takeharu; Itoh, Noriji; and Ishigo, Hideyasu, 3,711,657.

Iwama, Masakuni: *See*—
Sakamoto, Kenro; Endo, Takaya; Iwama, Masakuni; Inoue, Isaburo; and Takei, Yutaka, 3,711,286.

Iwasawa, Naozumi: *See*—
Watanabe, Tadashi; Murata, Koichiro; Iwasawa, Naozumi; and Okinaga, Tsuyoshi, 3,711,434.

Iwatani & Co., Ltd.: *See*—
Koyano, Nobushige; Hattori, Tadashi; and Kidowaki, Yoshimasa, 3,711,716.

Izumi, Shinjiro. Synthetic resin seamless tetrahedron. 3,710,541, Cl. 53-29.000.

Jachimowicz, Ludwik, to General Cable Corporation. Moisture block in sheathed telephone cables. 3,711,621, Cl. 174-23.00r.

Jacob, Ingolf: *See*—
Buttner, Gert; and Jacob, Ingolf, 3,710,463.

Jacobs, William B.: *See*—
Goodson, Louis H.; and Jacobs, William B., 3,711,251.

Jadin, Andre, to Glaverbel S.A. Apparatus for bending sheet material. 3,711,265, Cl. 65-287.000.

Jaeger, Hannes; and Veprek, Walter, to Siemens Aktiengesellschaft. Program-controlled data telecommunication exchange system and method for priority assignment of operating cycles. 3,711,835, Cl. 340-172.500.

Jaeger, Joseph H.: *See*—
Rico, Edward H.; and Jaeger, Joseph H., 3,710,786.

Jakob, Franz: *See*—
Fester, Walter,; Hanschke, Ernst, and; and Jakob, Franz, 3,711,447.

Jakob, Hans, to American Safety Equipment Corporation. Dead zone mechanism for and inertia locking retractor. 3,711,037, Cl. 242-107.400.

James, Henry J.: *See*—
Young, Carter R.; and James, Henry J., 3,710,862.

James, Varnell L., to Boeing Company, The. Pneumatic leading edge flap for an aircraft wing. 3,711,039, Cl. 244-44.000.

Jamieson, Donald R.: *See*—
Gilbert, Ronald E.; Jamieson, Donald R.; and Clampitt, Bert H., 3,711,456.

Jangaard, Sverre M., to Campbell Industries. Purse ring stripper and stripping method. 3,710,498, Cl. 43-4.500.

Jansen, George E., to Pantasote Company of New York, Inc., The. Trays for photographic slides. 3,710,975, Cl. 220-31.000.

Janssen, Peter Johannes Hubertus, to U.S. Philips Corporation. Automatic contrast control circuit for a television receiver. 3,711,636, Cl. 178-5.40r.

Japan Atomic Energy Research Institute: *See*—
Kasamatsu, Tomomichi; and Sakurai, Hiroshi, 3,711,387.

Japan Gas-Chemical Company, Inc.: *See*—
Huang, Ching Yun; and Maeno, Tamostu, 3,711,558.

Japan Monopoly Corporation, The: *See*—
Tamaki, Einosuke; Morishita, Isao; Nishida, Ko; Kato, Kunio; and Matsumoto, Takashi, 3,710,512.
Tamaki, Einosuke; Kobari, Masao; Miyanowaki, Fumihiro; Kato, Kunio; Nishida, Ko; and Shimizu, Yukio, 3,710,805.

Jarck, Walter. Tree harvesting apparatus and method. 3,710,834, Cl. 144-309.0ac.

Jarema, Chester P.; and Niebylski, Leonard M., to Ethyl Corporation. Foamed core sandwich construction. 3,711,363, Cl. 161-161.000.

Jascalevich, Mario Enrique. Thoracic inlet rid retractor. 3,710,783, Cl. 128-20.000.

Jasgur, Joseph. Glareless mirror using relatively rotatable polarizers. 3,711,182, Cl. 350-159.000.

Jatteau, Michel Rene, to North American Philips Co., Inc. Circuitry for displaying isodensity lines in an image. 3,711,642, Cl. 178-6.800.

Jaulmes, Eric, to Ateliers de la Motobecane. Ignition and control devices for fuel burners. 3,711,237, Cl. 431-69.000.

Jaworek, Dieter; Gruber, Wolfgang; and Bergmeyer, Hans Ulrich, to Boehringer Mannheim G.m.b.H. Copolymers of acrylamide. 3,711,574, Cl. 260-878.00r.

Jeger, Oskar; and Wehrli, Ueli, to Ciba-Geigy Corporation. 3-Azo-19-hydroxy-3,19-cyclo-a-homo-steroids and process for their manufacture. 3,711,511, Cl. 260-326.50b.

Jensen, William T., to Superior Continental Corporation. Cable terminus for encapsulated load coils. 3,711,629, Cl. 174-76.000.

Jerman, Max E. Teaching aid. 3,710,456, Cl. 35-31.00b.

Jernberg, Nils A.: *See*—
Tatum, Howard J.; Jernberg, Nils A.; and Braun, John, 3,711,035.

Jet Spray Cooler, Inc.: *See*—
Arzberger, William A.; and La Lumiere, Edward J., 3,710,981.

Jetco Electronic Industries, Inc., mesne: *See*—
Meyer, Charles Paul, Jr., 3,711,755.

Joerns Furniture Company: *See*—
Peterson, Warren J., 3,710,404.

Johannessen, Paul R., to Megapulse Incorporated. Apparatus and method for radio-frequency pulse generation in tuned radio-frequency loads. 3,711,725, Cl. 307-108.000.

Johanson, Lars. Tool holding system. 3,711,105, Cl. 279-1.00r.

Johansson, Nils Soren Lennart: *See*—
Abelin, Rudolf; Johansson, Nils Soren Lennart; and Hakansson, Andres Borje, 3,710,678.

Johnson & Johnson: *See*—
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Johnson, Arthur L., to Eastman Kodak Company. Metallocene photoconductors used in electrophotography. 3,711,280, Cl. 96-1.600.

Johnson, Glenn W.: *See*—
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Johnson, Howard L., to Caterpillar Tractor Company. Hydraulic clutch booster with supply and exhaust valve. 3,710,909, Cl. 192-91.00r.

Johnson, Jack B.: *See*—
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Johnson, Lyman A.: *See*—
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Johnson, Marvin M.; and Tabler, Donald C., to Phillips Petroleum Company. Cracking catalyst restoration with antimony compounds. 3,711,422, Cl. 252-414.000.

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Johnson, Robert L.; Overoye, Kenneth R.; and Bhuta, Pravin G., to TRW Inc. Acoustic particle concentration measuring instrument and method. 3,710,615, Cl. 73-61.00r.

Johnson, Thomas R.; and Joiner, Luther K., to Johnson & Johnson. Loom take-up mechanism and method. 3,710,829, Cl. 139-304.000.

Johnson, William H., to Research Corporation. Method for turgor conditioning tobacco. 3,710,803, Cl. 131-140.00p.

Johnsson, M. K. Olof. Method for the production of liquid pig iron or steel directly of dressed ore. 3,711,275, Cl. 75-30.000.

Joiner, Luther K.: *See*—
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Joisten, Siegfried: *See*—
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Korchynsky, Michael; Bell, John R.; and Cover, Richard J., 3,711,340.

Jones, Cecil H. Tube shaping device. 3,710,609, Cl. 72-392.000.

Jones, Ernest Frank, to Esso Research and Engineering Company. Rust preventative compositions containing a wax metal naphthenate, and a natural fatty body-polyol ester. 3,711,420, Cl. 252-389.000.

Jones, Gerald D., to Imperial Oil Limited. Multi-pattern spraying apparatus. 3,711,030, Cl. 239-397.000.

Jones, John Paul, Jr., to Compuline Corporation. Electrolytic timer delay capsule. 3,711,751, Cl. 317-232.000.

Jones, Keith L., to Box, Jones, and Label Co., Limited. Safety cap for vials. 3,710,971, Cl. 215-9.000.

Jones, Ralph S.: *See*—
Jones, Ralph S.; and Stich, Willi L. (said Stich assor. to said), 3,711,619.

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Jones, Russell. Cymbal spinner. 3,710,669, Cl. 84-402.000.

Jones, William E.: *See*—
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Jones, Woodford F. Air supported structures for fenced areas. 3,710,519, Cl. 52-2.000.

Jonsson, Kurt Alfred; and Svanstrom, Elis Kjell Ake. Method for separation of tungsten chloride from a mixture of metal chlorides. 3,711,592, Cl. 423-60.000.

Joosten, James K. Material handling vehicle and method of storing same. 3,710,965, Cl. 214-515.000.

Jorgensen, Mogens Holger, to Haldor Frederik Axel Topsoe. Process for preparing a chromium-promoted iron oxide catalyst. 3,711,426, Cl. 252-440.000.

Josefsson, Erik Anders Ake, to Stora Kopparbergs Bergslags Aktiebolag. Method of manufacturing chromium alloyed steel. 3,711,278, Cl. 75-130.500.

Joseph, Hans H.: *See*—
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Joseph, Robert T.: *See*—
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Joshi, Kailash C.; and Lee, Franklin F. M., to International Business Machines Corporation. Method of making sintered metal ultrasonic bonding tips. 3,711,341, Cl. 148-126.000.

Joslyn Mfg. and Supply Co.: *See*—
Swehla, Raymond J., 3,711,818.

Joyslen, Jack F., to Stiefrater, Gerhard W. Power stabilizer and method. 3,711,114, Cl. 280-124.00f.

Jozlin, Joseph A., to Sevald, William T. Ignition apparatus. 3,710,764, Cl. 123-32.0sp.

Judlowe, Stephen B. Signal translating circuit for passing very low frequency information. 3,711,775, Cl. 324-123.00r.

Julian, Percy L. Composition of matter with low cholesterol content and containing wool grease alcohols as major component and method. 3,711,611, Cl. 424-358.000.

Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See—*
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Kaiser, Carl; and Ross, Stephen T., to Smith Kline & French Laboratories. Alpha-aminoalkyl-4-hydroxy-3-sulfamoylaminobenzyl alcohols. 3,711,545, Cl. 260-556.00n.

Kaiser, Francis D., to Westinghouse Electric Corporation. Rectifier-transformer system. 3,711,760, Cl. 321-5.000.

Kaiser, Lavern L.: *See—*
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Kakefuda, Koiti; Ito, Tatsuo; and Okano, Yasuyuki, to Hitachi Chemical Company, Ltd. Three stage emulsion and suspension process for production of impact resistant thermoplastic resins. 3,711,575, Cl. 260-881.000.

Kalmar Verkstadsaktiebolag: *See—*
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Kaltmann, Hans-Joachim, to Rheinmetall GmbH. Muzzle-brake with a flash hider for automatic weapons and guns. 3,710,683, Cl. 89-14.00b.

Kameoka, Akio; Nakamura, Shinichi; and Kuriyagawa, Mamoru, to Tokyo Shibaura Electric Co., Ltd. Musical tone signal generator. 3,711,620, Cl. 84-1.240.

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Kaneko, Yoichi,; Fujiwara, Yukinari; Kimura, Katuhiro; and Kamimura, Masao, to Hitachi, Ltd. and Hitachi Electronics Company Limited. Solid state oscillator having semiconductor elements mounted in a cavity resonator. 3,711,792, Cl. 331-96.000.

Kansai Paint Company Limited: *See—*
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Kaplan, Louis: *See—*
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Kaplan, Murray A.; and Granatek, Alphones Peter, to Bristol-Myers Company. Purification of 6-/D-(3-guanyl-1-ureido) phenylacetamido/ penicillanic acis. 3,711,471, Cl. 260-239.100.

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Karll, Robert E.; and Lee, Richard J., to Standard Oil Company (Indiana). Sulfonamides of high molecular weight alkyl-substituted benzene sulfonic acids and their preparation. 3,711,408, Cl. 252-47.500.

Karoll, Elizabeth A.: *See—*
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Kefalas, John H., to Honeywell Information Systems, Inc. Magnetic device for domain wall propagation. 3,711,838, Cl. 340-174.0tf.

Keffeler, James R.: *See—*
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Kelling, Leroy U. C., to General Electric Company. Division with pulse width modulation. 3,711,783, Cl. 330-86.000.

Kelly, Austin T., to Weston Instruments. Digital ohmmeter circuit. 3,711,850, Cl. 340-347.0nt.

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Kelly, Robert C., to Upjohn Company, The. Tricyclic lactone alkene or alkenynes. 3,711,515, Cl. 260-343.300.

Kelly, Vincent M.; and Scudder, John R. Erectable building structure. 3,710,806, Cl. 135-4.00r.

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Kennel, George Wm.; and Ornstein, Flushing Gerald, to Dorr-Oliver Incorporated. Centrifugal pump with open type impeller. 3,711,218, Cl. 415-131.000.

Kent, Cecil, to Creators Limited. Decorative plastics strips and motifs. 3,711,360, Cl. 161-44.000.

Keranen, John J., to Cutler-Hammer, Inc. Switch having a shock-proof lighted toggle lever. 3,711,669, Cl. 200-167.00a.

Kereluk, Karl, to American Sterilizer Company. Microbiological-scaled sterility controls. 3,711,378, Cl. 195-103.50r.

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Khokhlov, Sergei Fedotovich; Yakovin, Viktor Petrovich; Sysoev, Petr Ivanovich; and Egorov, Valery Pavlovich, to Severodonetsky Ordena

Lenina Khimichesky Kombinat. Foam-type apparatus for carrying out heat and mass transfer processes. 3,711,070, Cl. 261-7900a.

Kidde, Walter, & Company, Inc.: *See—*
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Kiel, Othar M., to Esso Production Research Company. Method of fracturing subterranean formations using oil-in-water emulsions. 3,710,865, Cl. 166-308.000.

Kielczewski, John J. Pipe pusher. 3,711,064, Cl. 254-29.00r.

Kierce, Thomas A. Method and apparatus for heating viscous sugar solutions. 3,711,330, Cl. 127-9.000.

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Kimberly-Clark Corporation: *See—*
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Kipple, Harry P.; Price, Charles E.; and Leader, Adam M., to Westinghouse Electric Corporation. Method of preparing insulated coil in slotted core. 3,710,437, Cl. 29-596.000.

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Klar, Erich; Schmid, Peter; and Schabert, Hans-Peter, to Siemens Aktiengesellschaft. Device for determining the neutron flux distribution in a nuclear reactor. 3,711,714, Cl. 250-83.100.

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Klaus, Irmscher; Cimbollek, Gerhard; Orth, Dieter; Nowak, Herbert; and Freisberg, Karl-Otto, to Merck Patent Gesellschaft mit beschrankter Haftung. 3-Aryl-benzazines. 3,711,478, Cl. 260-243.00r.

Klebe, Hans; Lange, Ludwig; and Mang, Gunther, to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler. Method and apparatus for emptying large packages. 3,710,979, Cl. 222-1.000.

Klinger, Theodore J.; and Wright, John R., to University of Mississippi, The. Optical switching and video devices using organo-substituted carboranes. 3,711,180, Cl. 350-150.000.

Klug, Joseph R.: *See—*
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Kobetz, Paul; and Lindsay, Kenneth L., to Ethyl Corporation. Process for recovering aluminum alkyls of selected molecular weight using complexes. 3,711,535, Cl. 260-448.00a.

Koblents, Mark Germanovich; Mitskevich, Gennady Feodosievich; Polovets, Eduard Jurievich; and Zhevago, Anatoly Fedorovich. Reed switch. 3,711,749, Cl. 317-155.000.

Koch, Theodore A.; and Eleuterio, Herbert S., to Du Pont de Nemours, E. I., and Company. Nonsolvent air oxidation of P-xylene. 3,711,539, Cl. 260-524.00r.

Kocher, Erich J., to Vilter Manufacturing Corporation. Refrigerant cooled oil system for a rotary screw compressor. 3,710,590, Cl. 62-468.000.

Koehler, Albert T.; Shideler, Paul J.; and Dohogne, Linus E., to Gerrard, A. J., & Company. Method for transferring cotton bales. 3,710,710, Cl. 100-3.000.

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Kogan, Naum Pinkhusovich; Mchedlov-Petrosyan, Otar Petrovich; and Satarin, Vladimir Ivanovich. Method of producing cement. 3,711,306, Cl. 106-100.000.

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Kohner Bros, Inc.: *See—*
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Kokzina, John W.; Moore, Joseph F.; and Kohn, Gustave K., to Chevron Research Cormpany. N-substituted-N-chlorocycloalkylthio urea. 3,711,530, Cl. 260-453.00r.

Kolbe, William H.; and Sagady, Alexander J., to General Motors Corporation. Epitrochoidal compressor. 3,711,225, Cl. 417-440.000.

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Koontz, Robert D., to EFMC Corporation. Gun mount closure or seal. 3,710,681, Cl. 89-36.00l.

Korchynsky, Michael; Bell, John R.; and Cover, Richard J., to Jones & Laughlin Steel Corporation. Corrosion-resistant high-strength low-alloy steels. 3,711,340, Cl. 148-36.000.

Kovacs, Lloyd, to Midland-Ross Corporation. Extruding and mixing equipment. 3,711,067, Cl. 259-191.000.

Kovar, Henry L., to Kovar, John R., Mfg. Co., Inc. Ground engaging implement tooth and mounting means therefor. 3,710,872, Cl. 172-707.000.

Kovar, John R., Mfg. Co., Inc.: *See—*
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Koyama, Yukinori: *See—*
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Koyano, Nobushige; Hattori, Tadashi; and Kidowaki, Yoshimasa, to Iwatani & Co., Ltd. and Precision Cutting Machine Co., Ltd. Photoelectric sensor for line tracing and edge tracing comprising means for switching photocell between different branches of a brige circuit. 3,711,716, Cl. 250-202.000.

Koziol, Joseph S., Jr.: *See—*
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Krake, Kenneth V., to Kimberly-Clark Corporation. Jacketed press roll. 3,710,470, Cl. 29-131.000.

Kramm, Carl H.; and Lee, Roger E., to Wedge-Lock Honing Stone Co. Honing stone apparatus. 3,711,260, Cl. 51-204.000.

Kratzer, Walter, to Wiesner-Hager KG. Chair having a back rest and means for adjusting the inclination thereof. 3,710,418, Cl. 16-145.000.

Krauthamer, Stanley, to Borg-Warner Corporation. A-C energizing system with static interrupter. 3,711,759, Cl. 321-14.000.

Kravitz, Stanley: *See—*
Estes, John H.; Herbstman, Sheldon; and Kravitz, Stanley, 3,711,566.
Estes, John Harold; Kravitz, Stanley; and Suggitt, Robert M., 3,711,399.
Suggitt, Robert M.; Estes, John H.; and Kravitz, Stanley, 3,711,425.

Kreuter, Kenneth G., to Robertshaw Controls Company. Pneumatic pump construction and method for making the same or the like. 3,711,226, Cl. 417-480.000.

Kroft, John D.; Pawletko, Joseph P.; Peters, Francis E.; and Yount, Carl T., to International Business Machines Corporation. Magnetically restorable high speed print hammer. 3,711,804, Cl. 335-266.000.

Krukowski, Richard. Smoke meter. 3,711,210, Cl. 356-207.000.

Krulls, Gerd E.; and Ruth, William H., to General Electric Company. Brush replacement device. 3,710,478, Cl. 29-205.00r.

Krumbiegel, Peter; and Schmidt, Heinz, to Deutsche Akademie der Wissenschaften. Liquid scintillation mixtures containing perdeuterized solvent and/or solubility increasing agent. 3,711,421, Cl. 252-408.000.

Krutogolov, Grigory Vasilievich: *See—*
Funberg, Izrail Leibovich; Nikolaev, Petr Petrovich; Gora, Viktor Epifanovich; Gulenko, Nikolai Nikolaevich; Papko, Viktor Ivanovich; Rozhkov, Nikolai Alexandrovich; Kats, Elya Isaevich; and Krutogolov, Grigory Vasilievich, 3,710,869.

Kryder, Robert Allen, to RCA Corporation. Automatic brightness control for image intensifier tube. 3,711,720, Cl. 250-213.0vt.

Kubo, Seitoku, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydrualic control device for automatic transmission. 3,710,649, Cl. 74-753.000.

Kuboko Paint Company, Limited: *See—*
Nagano, Toshihiro; Suzuki, Matsuo; Hayashi, Isao; Kato, Takashi; Mochizuki, Hiroshi; Aoshima, Yasuo; Shibata, Kouji; and Takahashi, Toshiro, 3,711,313.

Kuck, Kermit T., to Monarch Machine Tool Company, The. Travel limit mechanism and method. 3,711,212, Cl. 408-3.000.

Kudo, Mitsuhiro: *See—*
Doi, Toshio; and Kudo, Mitsuhiro, 3,710,844.

Kugler, Carl J., to Singer Company, The. Meter volume compensating mechanism. 3,710,624, Cl. 73-233.000.

Kugler, Robert J., to Action Packaging Corporation. Resealable packaging device. 3,711,011, Cl. 229-7.00r.

Kuhle, Engelbert: *See—*
Zumach, Gerhard; Holtschmidt, Hans; and Kuhle, Engelbert, 3,711,491.

Kuhn, Edmund W., to Westinghouse Electric Corporation. Electric disconnect switch having improved operating mechanism. 3,711,662, Cl. 200-48.00a.

Kuhn, Richard B.: *See—*
Deye, Neil S.; and Kuhn, Richard B., 3,711,637.

Kuhn, Thomas G.; and Seitz, Neil B., to Logicon, Inc. Adaptive pulse code modulation system. 3,711,650, Cl. 179-15.0bw.

Kuhnen, Fred: *See—*
Schelling, Hans-Peter; and Kuhnen, Fred, 3,711,477.

Kulischenko, Walter; and Callahan, John W., to Pennwalt Corporation. Abrading apparatus. 3,710,515, Cl. 51-8.000.

Kulsa, Peter; and Rooney, Clarence S., to Merck & Co., Inc. Isoxazolin-3-yl-substituted-5-nitromidazoles. 3,711,495, Cl. 260-307.00r.

Kume, Toyohiko: *See—*
Kishino, Shigeo; Uchihira, Sadao; Kurahashi, Yoshio; and Kume, Toyohiko, 3,711,580.

Kunz, Hans J.: *See—*
Chu, Bing C.; Fischer, David J.; and Kunz, Hans J., 3,711,073.

Kurahashi, Koichiro; Nakada, Masanori; Nishimura, Koichi; and Abe, Masaaki, to Mitsubishi Electric Corporation. Apparatus for reproducing video information in slow motion. 3,711,643, Cl. 178-7.200.

Kurahashi, Yoshio: *See—*
Kishino, Shigeo; Uchihira, Sadao; Kurahashi, Yoshio; and Kume, Toyohiko, 3,711,580.

Kurasawa, Makoto, to Kabushiki Kaisha Ricoh. Shutter release device for cine cameras. 3,711,193, Cl. 352-178.000.

Kurio, Noriyuki, to Toyo Kogyo Co., Ltd. Corner seal spring for a rotary piston engine. 3,711,229, Cl. 418-121.000.

Kuriyagawa, Mamoru: *See—*
Kameoka, Akio; Nakamura, Shinichi; and Kuriyagawa, Mamoru, 3,711,620.

Kurschner, Hermann E.; and Mahoney, Robert Emmett, to Air Preheater Company, Inc., The. Unrestrained rotor. 3,710,850, Cl. 165-9.000.

Kurtz, Peter, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of 3,4-unsaturated nitriles. 3,711,527, Cl. 260-465.800.

Kushihashi, Akira; and Yamada, Naoyoshi, to Nippon Sheet Glass Co., Ltd. Glass having semi-transparent colored coating. 3,711,322, Cl. 117-124.00a.

Kuus, Herbert. Electric ski waxer. 3,711,678, Cl. 219-227.000.

Kuzuya, Takashi; Hayashi, Toshihiko; and Fukaya, Shigeo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for optionally selecting the thrust force in friction welding. 3,711,009, Cl. 228-2.000.

Kyorin Seiyaku Kabushiki Kaisha: *See—*
Irikura, Tsutomu; and Imai, Jun, 3,711,319.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Nakayama, Kiyoshi; Tanaka, Haruo; and Kase, Hiroshi, 3,711,375.
Tanaka, Katsunobu; Kimura, Kazuo; and Yamamoto, Masaki, 3,711,373.
Tanaka, Katsunobu; and Kimura, Kazuo, 3,711,374.

La Lumiere, Edward J.: *See—*
Arzberger, William A.; and La Lumiere, Edward J., 3,710,981.

La Russa, Joseph, to Farrand Optical Co., Inc. Instrument landing apparatus for aircraft. 3,711,826, Cl. 340-27.0na.

La Telephonie Industrielle et Commercial Telic: *See—*
Bloch, Paul, 3,711,801.

La Warre, Robert W., Sr., to Beatrice Foods Co. Snack food production. 3,711,296, Cl. 99-80.00r.

Labatt Breweries of Canada Limited: *See—*
Geiger, Kenneth H.; and LeMaire, Hubert, 3,711,293.

Lachowicz, Donald R.; Saines, George S.; and Eckert, George W., to Texaco Inc. Motor fuel composition. 3,711,255, Cl. 44-66.000.

Lacono, Vincent D.: *See—*
Spano, Leo A.; and Lacono, Vincent D., 3,710,395.

Lafferty, Gary S., Sr., to Milwaukee Electric Tool Corporation. Locators for drywall fasteners. 3,710,832, Cl. 144-32.000.

Lagstrom, Goran Emil. Method of purifying sewage and waste liquids and a decocting system for carrying out the method. 3,711,381, Cl. 203-20.000.

L'Air Liquide, Societe Anoyme pour l'Etude et l'Exploitation des Procedes Claude, Georges: *See—*
Zumbrunn, Jean-Pierre; and Crommelynck, Francois, 3,711,402.

Lambert, John B.: *See—*
Kelly, Marvin F.; and Lambert, John B., 3,710,474.

Lamm, Heinz, to Daimler-Benz Aktiengesellschaft. Rotary piston internal combustion engine especially of trochoidal construction. 3,710,575, Cl. 60-298.000.

Lamming, Ernest V. Device for measuring coins and wrapping them in rolls. 3,710,544, Cl. 53-213.000.

Lamy, Jacques Edouard, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Attenuation of noise from air or gas intake ducts, more especially in aircraft jet turbine engines. 3,710,889, Cl. 181-33.0ha.

Land, Edwin H., to Polaroid Corporation. Motion picture cassette. 3,711,192, Cl. 352-78.00r.

Landis, Elmer J., to Armstrong Cork Company. Method of reproducing wood grain surface configurations. 3,711,346, Cl. 156-58.000.

Landwerlin, Michel: *See—*
Boyer, Marce-Louis; and Landwerlin, Michel, 3,711,003.

Lang, Winfried: *See—*
Bienert, Klaus; Lang, Winfried; and Weidner, Herbert, 3,711,594.

Lange, Ludwig: *See—*
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Langemann, Albert: *See—*
Bollag, Werner; Gutmann, Hugo; Hegedus, Balthasar; Kaiser, Ado; Langemann, Albert; Muller, Marcel; and Zeller, Paul, 3,711,543.

Lanphere, Gerald B.; Bart, Seymour H.; and Armstrong, Jack W., to Lipe-Rollway Corporation. Apparatus for detecting and rejecting improperly oriented objects. 3,710,922, Cl. 198-33.00r.

Lard, Edwin W.: *See—*
Stahly, Eldon E.; and Lard, Edwin W., 3,711,572.

Larralde, Edward: *See—*
Hanes, James W. E.; Larralde, Edward; and Rimmer, Michael J., 3,710,859.

Latash, Jury Vadimovich: *See—*
Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Dubinsky, Rudolf Solomonovich; Latash, Jury Vadimovich; Emelyanenko, July Georgievich; and Baglai, Vitaly Mikhailovich, 3,711,616.

Lauer, Hubert; and Schleppinghoff, Bernhard, to Erdolchemie Gesellschaft mit beschrankter Haftung. Process for stabilizing dienes. 3,711,565, Cl. 260-666.500.

Lawhead, Robert E.; and Steele, William E., to International Business Machines Corporation. Magnetic card stripe printer. 3,711,359, Cl. 156-583.000.

Lawrence, Christopher John. Marine winch. 3,711,065, Cl. 254-150.00r.

Lazarus, Stokes S. Aerosol type dispenser. 3,710,990, Cl. 222-402.240.

Leach, Raymond B. Hub assembly. 3,711,170, Cl. 308-184.000.

Leader, Adam M.: *See—*
Kipple, Harry P.; Price, Charles E.; and Leader, Adam M., 3,710,437.

Leanneret, Jules. Machine tool carriages. 3,710,633, Cl. 74-107.000.

Lee, Bert J.: *See—*
Royse, James F.; and Lee, Bert J., 3,710,480.

Lee, Charles A.; and Furbeck, Warren R., to International Paper Company, mesne. Method of and an apparatus for automatically compressing and banding a stack of articles. 3,710,536, Cl. 53-24.000.

Lee, Franklin F. M.: *See—*

Joshi, Kailash C.; and Lee, Franklin F. M., 3,711,341.

Lee, Kyu Tai, to Du Pont de Nemours, E. I., and Company. 2-[Bis(p-substituted phenyl)methylene] adamantane. 3,711,556, Cl. 260-613.00r.

Lee, Richard J.: *See—*
Karll, Robert E.; and Lee, Richard J., 3,711,408.

Lee, Roger E.: *See—*
Kramm, Carl H.; and Lee, Roger E., 3,711,260.

Leebrick, John R., 1/4 to Coon, Lucille. Process for preparing dialkyltin compounds. 3,711,524, Cl. 260-429.700.

Leeper, Harold M.: *See—*
Higuchi, Takeru; and Leeper, Harold M., 3,710,795.

Leeper, Henry P., Jr., to United Aircraft Corporation. Repair process for aluminum and magnesium articles. 3,711,310, Cl. 117-2.000.

Lees, Nathaniel P., to Singer Company, The. Thread-cutting mechanism for sewing machines. 3,710,743, Cl. 112-252.000.

Lefcort, Malcolm D.: *See—*
Vermilion, Everette F.; Seeley, Eugene B.; and Lefcort, Malcolm D., 3,711,646.

Lefebvre, Henri, to Solvay & Cie. Process for the treatment of the crude mixture resulting from the preparation of an adiponitrole by dimerization. 3,711,078, Cl. 260-465.80a.

Lefort, Marcel; and Robin, Jean, to Rhone-Poulenc S.A. Polymers with silylurea units which can by converted into polyurea elastomers. 3,711,442, Cl. 260-75.0nh.

Leger, Lucien, to Glaverbel S.A. Surface treatment of glass and similar materials. 3,711,263, Cl. 65-31.000.

Lehmann, Claude; and Renk, ERnest, to Ciba-Geigy Corporation. Certain furazan derivatives in therapeutic compositions and methods. 3,711,609, Cl. 424-272.000.

Leidy, Harold T.; Kerrigan, Charles M.; Tewey, Robert T.; and Bartenbach, Louis, to General Foods Corporation. Juicy sausage analog. 3,711,291, Cl. 99-17.000.

Lektro-Vend Corporation: *See—*
Callahan, William H.; and Smith, Royal F., 3,710,991.

Lelandais, Gilbert. Device for remote-controlled reciprocal emission, transmission and reception of mechanical information. 3,711,758, Cl. 318-675.000.

LeMaire, Hubert: *See—*
Geiger, Kenneth H.; and LeMaire, Hubert, 3,711,293.

Lemmon, Richard Charles: *See—*
Fitzgerald, William Vincent, Jr.; and Lemmon, Richard Charles, 3,711,738.

Lemon, George E. Elastic bandage. 3,710,790, Cl. 128-165.000.

Leonard, George Hamlin. Extended-scale indicators. 3,710,751, Cl. 116-115.500.

Leonard, Kenneth R., to Cryogenic Engineering Company. Low-loss closed-loop supply system for transferring liquified gas from a large container to a small container. 3,710,584, Cl. 62-54.000.

Lepley, James W.: *See—*
Stauffer, Aaron Z.; Herr, John H.; Lepley, James W.; and Zimmerly, James C., 3,710,960.

Lepley, James W. Safety enclosure for silos. 3,710,986, Cl. 222-185.000.

LeTourneau, R. G., Inc.: *See—*
Molby, Lloyd A., 3,711,121.

Leuschner, Udo; and Schubert, Wolf-Dieter, to Siemens-Electrogerate GmbH. Electric thru-flow heater for use with coffee machines and the like. 3,711,681, Cl. 219-303.000.

Lever Brothers Company: *See—*
Von Mikusch-Buchberg, Johannes Donatus, 3,711,307.

Leverenz, Kenneth H.: *See—*
Leverenz, Melvin E.; and Leverenz, Kenneth H., 3,710,811.

Leverenz, Melvin E.; and Leverenz, Kenneth H., to Diamond Crystal Salt Company. Method and apparatus for controlling the salinity of a solution. 3,710,811, Cl. 137-5.000.

Levitan, Maurice D.: *See—*
Staats, Henry N.; and Levitan, Maurice D., 3,711,355.

Levitt, Harold O., to United States Steel Corporation. Outdoor crane. 3,710,728, Cl. 104-251.000.

Lewis, Richard Newton, to Stauffer-Wacker Silicone Corporation. Organopolysiloxane-polyvinyl chloride blends. 3,711,570, Cl. 260-827.000.

Liberti, Frank N., to General Electric Company. Thermal oxidatively stable polycarbonate composition. 3,711,441, Cl. 260-47.0xa.

Licentia Patent-Verwaltungs G.m.b.H.: *See—*
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Licentia Patent-Verwaltungs-GmbH: *See—*
Schiekel, Manfred; Sussenbach, Helmut; and Eichhorst, Ingo, 3,711,383.

Liechti, Peter: *See—*
Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,711,472.

Light, Leon Henry, to National Research Development Corporation. Doppler shift ultrasonic vascular flowmeter employing energy content of reflected wave. 3,710,792, Cl. 128-2.05f.

Lilienfeld, Pedro; and Doyle, Arnol W., to GCA Corporation. Aerosol particle monitor. 3,711,707, Cl. 250-43.50d.

Lilly, Eli, and Company: *See—*
Hamill, Robert L.; Haney, Michael E., Jr.; and Hoehn, Marvin M., 3,711,605.

Lim, Koang Eng, to Northern Electric Company Limited. Universal active lattice network. 3,711,730, Cl. 307-295.000.

Limberger, Walter, to Lumoprint Zindler KG. Silver salt diffusion process. 3,711,281, Cl. 96-29.00r.

Lincoln, Frank H., Jr.: *See—*
Beal, Philip F., III; Lincoln, Frank H., Jr.; and Babcock, John C., 3,711,528.

Lincoln, Joseph A.: *See—*
Cullen, Orville E.; and Lincoln, Joseph A., 3,711,342.

Lindsay, Kenneth L.: *See—*
Kobetz, Paul; and Lindsay, Kenneth L., 3,711,535.

Lindsay Specialty Products, Limited: *See—*
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Linenfelser, Carl J., to Brooklyn Products, Inc. Aerodynamic toy. 3,710,505, Cl. 46-74.00d.

Linn, Wallace L., to Mallory, P. R., & Co., Inc. Means for aiding fuel atomization. 3,711,257, Cl. 48-180.00r.

Lion Fat & Oil Co., Ltd.: *See—*
Susuki, Rinnosuke; Hoshi, Hiroshi; Saito, Jiro; and Hirakawa, Michio, 3,711,438.

Lipe-Rollway Corporation: *See—*
Lanphere, Gerald B.; Bart, Seymour H.; and Armstrong, Jack W., 3,710,922.

Lippe, Robert J.: *See—*
Tully, Paul R.; and Lippe, Robert J., 3,710,510.

Lipson, Menzie: *See—*
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Little Wonder, Inc.: *See—*
Pfeiffer, Norman O., 3,710,870.

Litton Systems, Inc.: *See—*
Maughmer, Robert W., 3,711,200.

Litvinoff, James R.; Evans, David F.; and Klug, Joseph R., to American Hospital Supply Corporation. Table and elevation lock therefor. 3,710,735, Cl. 108-146.000.

Liversidge, Thomas K.; and Begley, Thomas J. Educational game. 3,710,455, Cl. 35-22.00a.

Lockheed Aircraft Corporation: *See—*
Simpson, William E., Jr., 3,710,820.
Tucker, John R.; and Williams, Raymond R., 3,710,696.

Lockley, Joseph T.: *See—*
Smilek, Norman N.; and Lockley, Joseph T., 3,710,532.

Lockley Manufacturing Co., Inc.: *See—*
Smilek, Norman N.; and Lockley, Joseph T., 3,710,532.

Loew, Frederic Christian, to Inmont Corporation. Stabilized polyurethane compositions. 3,711,439, Cl. 260-45.80n.

Lofland, Jerry C.: *See—*
Hibbert, Peter G.; and Lofland, Jerry C., 3,711,321.

Logerquist, John R. Truck for tool box. 3,711,110, Cl. 280-43.240.

Logicon, Inc.: *See—*
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Lohbauer, Kenneth R., to Caterpillar Tractor Company. High pressure relief valve. 3,710,824, Cl. 137-596.000.

Lohr, Thomas E., to Allied Chemical Corporation. Pyrotechnic gas generator. 3,711,115, Cl. 280-150.0ab.

Lomachenko, Gennady Nikolaevich: *See—*
Turetsky, Lazar Isaakovich; Gryzlov, Anatoly Grigorievich; Proskurovsky, Filipp Yakovlevich; Lomachenko, Gennady Nikolaevich; and Ageev, Nikolai Ivanovich, 3,710,821.

Lomakka, Gosta Mattias: *See—*
Caspersson, Torbjorn Oskar; and Lomakka, Gosta Mattias, 3,711,209.

Lombardino, Joseph G., to Pfizer Inc. Certain 8,9-dihydro-[3,4,7,8]cycloocta[1,2-d] imidazoles. 3,711,489, Cl. 260-296.00p.

Long, Arthur H.; and Seidel, Joseph, to Westinghouse Electric Corporation. Method for optimizing the making of a laminated fibrous strip. 3,710,430, Cl. 29-419.000.

Loomis, Peter B.: *See—*
Donlon, Richard H.; Close, David E.; and Loomis, Peter B., 3,710,724.

Lopes, Rosario, to Temo Incorporated. Mobile home skirting. 3,710,525, Cl. 52-169.000.

Lorenz, Ewald; and Soring, Holgar, to Koh-I-Noor Rapidograph, Inc. Tube writing pen, particularly for automatic drawing machines. 3,711,861, Cl. 346-140.000.

Lorenzen, Walter C., to Anzen Products, Inc. Multiple solutes additive apparatus. 3,710,817, Cl. 137-268.000.

Losch, Heinz; and Mecklenbrauck, Heinrich, to Gewerkschaft Eisenhutte Westfalia. Apparatus for extracting and transferring materials. 3,710,963, Cl. 214-17.00d.

Love, John J.: *See—*
Kinsella, Howard R.; Love, John J.; Smith, Carl A.; and Visos, Charles D., 3,711,236.

Lowe, Warren, to Chevron Research Company. Lubricating oil containing an hydroxylated amine and an overbased sulfonate or phenate. 3,711,406, Cl. 252-33.400.

Lowey, Francis J.; and Gerding, John E., to Friction Products, Co. Rivetless friction pad for aircraft brakes. 3,710,914, Cl. 192-107.00r.

Lowy, Lawrence; and Wurtz, William O. Method for filling pressurized packages and aerosol dispensers. 3,710,538, Cl. 53-22.00r.

Lubrano, Claude, to Compagnie Industrielle des Telecommunications. Receiver for data transmission. 3,711,829, Cl. 340-146.1ax.

Lucas, Joyce Imeson: *See—*
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Lucerne Products, Inc.: *See—*
Sahrbacker, Edward V., 3,711,666.

Luksas, Anthony J.; and Williams, Wilmore, to Beatrice Foods Co. Production of soy sauce. 3,711,303, Cl. 99-145.000.

Lummus Company, The: *See—*

Summerville, Robert N., 3,711,544.
Lumoprint Zindler KG: *See—*
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Lussi, Heinz; and Torre, Hans Dalla, to Inventa AG. Process for the preparation on N-alkyllactams having at least 10 ring members. 3,711,465, Cl. 260-239.30r.
Luton, James N., Jr., to United States of America, Atomic Energy Commission. Passive energy dump for superconducting coil protection. 3,711,744, Cl. 317-13.00d.
Lyda, Samuel J. Fluid-flow fuse. 3,710,822, Cl. 137-549.000.
Lyde, Derek Martin. Electrodeposition of nickel. 3,711,384, Cl. 204-49.000.
Lyness, Warren I.; Amel, Ronald T.; and Booth, Gary E. Heterocyclic nitrogen- and sulfur-containing optical brightener compounds and detergents and bleach compositions containing same. 3,711,474, Cl. 260-240.0ca.
M & W Gear Company: *See—*
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MacDonald, Howard R.: *See—*
Tontini, Remo; Millman, Victor; and MacDonald, Howard R., 3,711,013.
Macgregor, Douglas J. H.: *See—*
Bornor, Brian J.; and Macgregor, Douglas J. H., 3,710,458.
Machek, John A., to Wagner Electric Corporation. Anti-rattle device for a disc brake. 3,710,896, Cl. 188-73.500.
MacKay, Patrick W.: *See—*
Celada, Juan; and MacKay, Patrick W., 3,710,808.
MacMillan Bloedel Limited: *See—*
Admiraal, Lambertus, 3,711,674.
Maddocks, Gerald E., to Fram Corporation. Air cleaner. 3,710,560, Cl. 55-419.000.
Madzsar, George C.; and Kozma, Otto, to White Motor Corporation. Streamlined vehicle configuration. 3,711,146, Cl. 296-1.00s.
Maeda Industries, Ltd.: *See—*
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Maeder, Erwin: *See—*
Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,711,472.
Maeno, Tamostu: *See—*
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Magerle, Karl, to Fubmatic Inter AG. Machine for producing hollow bodies of plastics material. 3,711,230, Cl. 425-126.000.
Magic Circle Corporation, The: *See—*
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Magic Mold, Inc.: *See—*
Bienenfeld, Myron, 3,710,801.
Mahoney, Robert Emmett: *See—*
Kurschner, Hermann E.; and Mahoney, Robert Emmett, 3,710,850.
Maier, Ludwig, to Monsanto Company. Nitrilo(ethylenephosphonic acid esters). 3,711,577, Cl. 260-932.000.
Mak-Kraft Creations, Inc.: *See—*
Weidner, Urban A.; and Charlich, Nicholas, 3,710,403.
Makamo, Shiuriyo, to Kabushiki Kaisha Koparu. Electronically controlled shutter. 3,710,700, Cl. 95-10.0ce.
Maley, William B., to Techlite, Inc. Lighting control circuit. 3,711,739, Cl. 315-82.000.
Mallory, P. R., & Co. Inc.: *See—*
Dey, Arabinda N.; and Holmes, Robert W., 3,711,334.
Linn, Wallace L., 3,711,257.
Mandrel Industries, Inc.: *See—*
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Mang, Gunther: *See—*
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Mann, Henry, Inc.: *See—*
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Manyik, Robert M.; and Walker, Wellington E., to Union Carbide Corporation. Synthesis of octadienyl esters. 3,711,534, Cl. 260-475.50n.
Marathon Oil Company: *See—*
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Maraulja, Matthew D.: *See—*
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Marceau, Rene. Front wheel steering assembly. 3,710,882, Cl. 180-9.380.
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Margave, John L.; Bautista, Renato G.; Ficalora, Peter J.; and Badachhape, Ramachandra B., to R. I. Patents, Inc. Chemical method for producing diamonds and fluorinated diamonds. 3,711,595, Cl. 423-446.000.
Marhold, Werner, to Sterigard Corporation. Apparatus for attaching a flexible bag to a container body. 3,710,693, Cl. 93-36.010.
Maringer, Robert E.: *See—*
Mobley, Carroll E.; and Maringer, Robert E., 3,710,842.
Maringulov, Konstantin Avraamovich. Device for electrical connection of electric and electronic components and method of its manufacture. 3,711,627, Cl. 174-68.500.
Marker, Hannes. Lockable ski carrier for motor vehicles. 3,710,998, Cl. 214-42.10f.
Marley Mend-More, Inc.: *See—*
Marley, Michael A., 3,710,593.
Marley, Michael A., to Marley Mend-More, Inc. Apparatus for mending knitted fabrics. 3,710,593, Cl. 66-1.00r.
Marlin Toy Products, Inc.: *See—*
Thornell, Ernest L., 3,710,506.
Marotta, Ralph, to Monsanto Company. Process for preparing silica aquasols. 3,711,419, Cl. 252-313.000.
Marsan, Mario S., to Procter & Gamble Company, The. Disposable diaper. 3,710,797, Cl. 128-284.000.
Martel, Jacques; and Huynh, Chanh, to Roussel-Uclaf. Aryl allyl sulfones. 3,711,555, Cl. 260-607.50a.
Martelli, Mario. Reed switches. 3,711,795, Cl. 335-151.000.
Martens, Henry J., to I.D. Engineering, Inc. Method of and apparatus for the detection of stolen articles. 3,711,848, Cl. 340-280.000.
Martin, Paul A.: *See—*
Van Sice, David P.; and Martin, Paul A., 3,710,668.
Martin, Richard H., to Olin Corporation. Vapor phase process for preparing aromatic isothiocyanates. 3,711,526, Cl. 260-454.000.
Martin-Marietta Corporation: *See—*
Casadevall, James L., 3,711,361.
Martinez, Miguel. Air conditioner with disposable air filter. 3,710,588, Cl. 62-317.000.
Martinsons, Aleksandrs, to PPG Industries, Inc. Electrode and process for making same. 3,711,397, Cl. 204-290.00f.
Martzloff, Francois D.: *See—*
Tasca, Dante M.; Harnden, John D., Jr.; and Martzloff, Francois D., 3,711,794.
Marumo, Nagayuki; and Irie, Namio, to Nissan Motor Company, Limited. Line pressure regulating system for automatic power transmission. 3,710,651, Cl. 74-864.000.
Marx, Thomas O., to Atwood Vacuum Machine Company. Heavy duty seat adjuster. 3,711,057, Cl. 248-430.000.
Maryland Cup Corporation: *See—*
Hollinger, Paul, 3,710,931.
Mashimo, Yukio: *See—*
Takishima, Yoshiyuki; and Mashimo, Yukio, 3,710,701.
Masuyama, Isao. Clockwork movement support. 3,710,566, Cl. 58-52.00r.
Maters, Jan, to Blom & Maters Machinefabriek N.V. Self-arranging conveyor. 3,710,919, Cl. 198-30.000.
Mathers, James E.; and Yale, Ramon L., to GTE Sylvania Incorporated. Rare earth oxide phosphors. 3,711,418, Cl. 252-301.40r.
Matheson, Neil. Apparatus for confining a floatable liquid. 3,710,577, Cl. 61-1.00f.
Mathewson Corporation: *See—*
Redman, Howard E.; and Kalning, Frederick E., 3,710,955.
Matsumoto, Takashi: *See—*
Tamaki, Einosuke; Morishita, Isao; Nishida, Ko; Kato, Kunio; and Matsumoto, Takashi, 3,710,512.
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Matsumura, Yoshihiko: *See—*
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Matsushita Electric Industrial Co., Ltd.: *See—*
Kaneko, Toyohisa; Sezaki, Nobuhiko; and Katagiri, Hiroshi, 3,711,831.
Oka, Shunzo; and Kitahara, Hisao, 3,711,811.
Wada, Mitsuo; Mikoda, Masanari; Aoki, Masaki; and Hikino, Tadashi, 3,711,328.
Matter, Max; and Michel, Karl, to Aktiebolaget Bofors. 4-Acylamino-1,2,4-triazole derivatives. 3,711,496, Cl. 260-308.00r.
Matthews, Charles W., to Institute of Gas Technology. Method of transporting natural gas. 3,711,258, Cl. 48-190.00r.
Matthews, Russell H., to Elco Corporation. Square pin receptacles employing channel contacts. 3,711,819, Cl. 339-192.00r.
Matulich, Dan S., to Garrett Corporation, The. Automatic interface control system. 3,711,044, Cl. 244-118.00p.
Maudlin, Wendell E., to Borg-Warner Corporation. Refrigeration system with fluid transformer for controlling refrigerant flow. 3,710,586, Cl. 62-216.000.
Maudlin, Wendell E., to Borg-Warner Corporation. Fluid powered expansion engine. 3,711,224, Cl. 417-344.000.
Maughmer, Robert W., to Litton Systems, Inc. Multiple-sensor laser velocimeter. 3,711,200, Cl. 356-28.000.
Maul, James J.; Stevens, James E.; and Schendel, Ronald L., to Hooker Chemical Corporation. Process for preparing brominated styrene halocyclopentadiene compounds. 3,711,562, Cl. 260-649.00r.
Maulding, Donald Roy, to American Cyanamid Company. Chemiluminescent reaction of substituted vinylene carbonates with hydrogen peroxide in the presence of a fluorescer. 3,711,415, Cl. 252-188.300.
Maurer, Robert, to Licentia Patent-Verwaltungs G.m.b.H. Nonreciprocal reactance amplifier arrangement. 3,711,780, Cl. 330-4.500.
Mawhinney, Robert C., to MB Associates. High energy minimum lethality weapon system. 3,710,720, Cl. 102-42.00c.
Max, Erhard; and Rogalla, Dietrich, to International Business Machines Corporation. Method for making magnetic thin film heads with magnetic anisotropy. 3,710,438, Cl. 29-603.000.
Maxwell Laboratories, Inc.: *See—*
King, William M., 3,711,746.
May, Arnold, to Teves-Thompson GmbH. Rotary device for elements subjected to axial movement, particularly for valves in internal combustion engines. 3,710,768, Cl. 123-90.300.

Mayer, Cornelius, to Werkzeugmaschinenfabrik Oerlikon-Buhrle A.G. Rocket projector magazines. 3,710,677, Cl. 89-1.800.
Maytag Company, The: *See—*
Smith, Thomas R., 3,710,910.
Mazzei, Alessandro: *See—*
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Mazzotti, Peter Charles, to Streeters Plant Hire Limited. Tunnelling machines. 3,711,159, Cl. 299-33.000.
MB Associates: *See—*
Mawhinney, Robert C., 3,710,720.
Mc Glynn, Walter J. Shoulder strap retainer. 3,710,391, Cl. 2-2.000.
Mc Junkin, Howard P., Jr., to Hurst Performance Inc. Stabilizing means for spring-mounted chassis of wheeled vehicles. 3,711,079, Cl. 267-1.00r.
Mc Laren, Richard H. Method and device for locating a foreign body in human eye. 3,711,712, Cl. 250-59.000.
Mc Mahon, Matthew A., to Texaco Inc. Process of producing ortho-aminophenol. 3,711,551, Cl. 260-575.000.
Mc Murtrie & Hamrick Enterprises: *See—*
Hamrick, James Saunders, 3,710,452.
McCaughey, William S., to Bunker-Ramo Corporation, The. Wire terminal crimping tool. 3,710,610, Cl. 72-410.000.
McClure, John W., to Avco Corporation. Air dynamometer having water injection spray nozzles. 3,710,619, Cl. 73-134.000.
McConnell, John R. Automatic fusion welder for structural steel members. 3,711,010, Cl. 228-4.000.
McCord Corporation: *See—*
Tucker, Thomas M., 3,710,632.
McCord, Kenneth J. Portable, mechanical lasso training apparatus. 3,711,098, Cl. 273-105.200.
McDonald, Ian Barry, to Cammell Laird & Company (Shipbuilders & Engineers, Limited). Buoyancy lifting devices. 3,710,746, Cl. 114-16.00e.
McDonald, William S.: *See—*
Wagers, William O.; Frappier, Robert H.; McDonald, William S.; and Boggs, Charles L., 3,711,352.
McDonnell Douglas Corporation: *See—*
Downing, James W.; and Harris, Charles V., 3,710,644.
Smatko, Joseph S., 3,711,336.
McElwain, Merle G.; and Miller, Kenneth J., to Caterpillar Tractor Company. Method of manufacturing a heat exchanger. 3,710,473, Cl. 29-157.30r.
McFalls, Richard J., to Cluett, Peabody & Co. Method and apparatus for automatic cape joining. 3,710,741, Cl. 112-121.150.
McGowan, Eugene V.: *See—*
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McGowan, John; Kirby, Charles Raymond; and Cormode, Henry Daniel Alexander, to Cominco Ltd. Potash granulation. 3,711,254, Cl. 23-313.000.
McGrath, John E., Jr.: *See—*
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McKenzie, Malcolm S., to Sandmaster Company. Dual element air filter. 3,710,562, Cl. 55-487.000.
McKinley, Harry R. Catadioptric telescope. 3,711,185, Cl. 350-201.000.
McLaren, Edwin C. Game piece. 3,710,508, Cl. 46-154.000.
McMillin, Bert M.: *See—*
Gremillion, Gerard S.; and McMillin, Bert M., 3,710,472.
McMurtry, David Harwood, to International Business Machines Corporation. Optical system for optical fiber bundle scanning apparatus. 3,711,723, Cl. 250-219.00d.
McNamara, John Owen, Jr. Method of forming building units and assembling same with lateral displacement. 3,710,534, Cl. 52-745.000.
McVey, Irvin M.; and Olson, Norman L., to Xerox Corporation, mesne. Cathode ray display systems. 3,711,737, Cl. 315-18.000.
Mead, Frederick C.: *See—*
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Mecklenbrauck, Heinrich: *See—*
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Medidyne, Inc.: *See—*
Rabjohn, Rodney R., 3,710,787.
Medkeff, Arthur T.: *See—*
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Medlar, Lewis A., to Honeywell Inc. High speed recording apparatus. 3,711,860, Cl. 346-74.00s.
Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Dubinsky, Rudolf Solomonovich; Latash, Jury Vadimovich; Emelyanenko, July Georgievich; and Baglai, Vitaly Mikhailovich, to Institut Elektrosvarki Imeni E.O. Patona Akademii Nauk Ukrainskoi SSR. Electrod holder, for instance, for an electroslag plant. 3,711,616, Cl. 13-16.000.
Megapulse Incorporated: *See—*
Johannessen, Paul R., 3,711,725.
Mellor, Eli K. Portable apparatus for operating or simulating operation of artificial kidneys or the like. 3,710,454, Cl. 35-17.000.
Menasco Manufacturing Company: *See—*
Kendall, Giles A., 3,711,080.
Mennekes, Werner; and Weinhold, Heinz. Mineral winning machines. 3,711,160, Cl. 299-43.000.
Merck & Co., Inc.: *See—*
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Christy, Marcia E., 3,711,518.
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Klaus, Irmscher; Cimbollek, Gerhard; Orth, Dieter; Nowak, Herbert; and Freisberg, Karl-Otto, 3,711,478.
Mercla, Anthony, to Amerola Products Corporation. Body restraining means. 3,711,154, Cl. 297-385.000.
Mercor Corporation: *See—*
Heehler, Arthur C.; and Taylor, George J., 3,710,752.
Merger, Franz, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of 3,3-disubstituted β-lactams. 3,711,469, Cl. 260-239.00a.
Merit Abrasive Products, Inc.: *See—*
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Mertzweiller, Joseph K.; and Tenney, Horace M., to Esso Research and Engineering Company. Hydrogenation of organic compounds. 3,711,423, Cl. 252-431.000.
Messenger, Joseph U.: *See—*
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Metallgesellschaft Aktiengesellschaft: *See—*
Grunewald, Gerhard W.; and Hochgesand, Gerhard, 3,710,546.
Meter Research Limited: *See—*
Tabor, Paul C., 3,710,674.
Metro, John G., to General Electric Company. Monolithic stereo decoder with balanced decoder operation. 3,711,652, Cl. 179-15.0bt.
Metzger, James B. Method for the utilization for organic waste material. 3,711,392, Cl. 204-180.00r.
Meyer, Burton C.: *See—*
Breslow, Jeffrey D.; Meyer, Burton C.; and Glass, Marvin I., 3,711,101.
Meyer, Charles Paul, Jr., to Jetco Electronic Industries, Inc., mesne. DC fishing motor speed and steering control. 3,711,755, Cl. 318-139.000.
Meyer, Gerald. Dry shaving apparatus. 3,710,442, Cl. 30-43.600.
Meyer, Hans P.; and Joseph, Hans H. Vehicle parking facility with a vertically extensible mast. 3,710,956, Cl. 214-16.1ce.
Meyer, Hans Rudolf: *See—*
Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,711,472.
Meyer, Joachim; and Pfeffer, Josef, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Pressure-retentive vessel, e.g. for pressurized-fluid nuclear reactors. 3,710,857, Cl. 165-169.000.
Michalek, Margaret E.: *See—*
Brown, Gordon R.; and Michalek, Margaret E., 3,710,589.
Michasiw, Harry. Auger device. 3,710,877, Cl. 175-18.000.
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Mikoda, Masanari: *See—*
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Milch, Robert A. Respiratory device with variable expiratory pressure resistance. 3,710,780, Cl. 128-25.00r.
Miller, Allen R.: *See—*
Miller, Charles R.; Miller, Allen R.; and Miller, David J., 3,710,695.
Miller, Arlin Lee: *See—*
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Miller, Bernard H. Eyeglass frame alignment device. 3,710,653, Cl. 81-3.500.
Miller, Charles R.; Miller, Allen R.; and Miller, David J., to Miller Formless Co., Inc. Construction machine and controls therefor. 3,710,695, Cl. 94-46.00r.
Miller, David J.: *See—*
Miller, Charles R.; Miller, Allen R.; and Miller, David J., 3,710,695.
Miller Formless Co., Inc.: *See—*
Miller, Charles R.; Miller, Allen R.; and Miller, David J., 3,710,695.
Miller, Harry C., to Sargent & Greenleaf, Inc. Key operable padlock with rotatable seal for plug. 3,710,603, Cl. 70-38.00a.
Miller, Kenneth J.: *See—*
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Miller, Ralph N., to Du Pont de Nemours, E. I., and Company. Centrifugal atomizing device. 3,711,025, Cl. 239-222.110.
Miller, Robert E., to Monsanto Company. Protein-sulfonyl halide complex ruminant feed material. 3,711,289, Cl. 99-2.00r.
Miller, Robert E., to Monsanto Company. Protein-acrolein acetal complex ruminant feed material. 3,711,290, Cl. 99-2.00r.
Miller, Theodore C.: *See—*
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Millman, Victor: *See—*
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Milvich, Boris. Predetermining counter. 3,711,016, Cl. 235-132.00e.
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Reckdahl, Segwald J.; and Folske, Donald W., 3,710,457.
Minushkin, Bertram; Kissel, George; and Salzano, Francis J., to United States of America, Atomic Energy Commission. Continuous oxygen monitoring of liquid metals. 3,711,394, Cl. 204-195.00s.
Mitani, Taizo, to Canon Kabushiki Kaisha. Single lens reflex camera with an interchangeable focus screen. 3,710,699, Cl. 95-10.0po.
Mitchell, Rayford E., to Dresser Industries, Inc. Well tubing tie back method and apparatus. 3,710,864, Cl. 166-277.000.
Mitchell, Wallace F., to Ammco Tools, Inc. Vibration dampener. 3,710,661, Cl. 82-38.00a.
Mitchell, William A.; and Stahl, Howard D., to General Foods Corporation. Honey-malt flavor material and process of preparation. 3,711,302, Cl. 99-141.00a.
Mitchell, William D., to Du Pont de Nemours, E. I., and Company. Method for improving the yield of fruits. 3,711,273, Cl. 71-120.000.
Mitskevich, Gennady Feodosievich: *See—*
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Miyazaki, Toshio, to Nissan Motor Company, Limited. Hydraulic control system of automatic transmission. 3,710,652, Cl. 74-864.000.
Mizunuma, Yoshiyuki, to Tokyo Shibaura Electric Co., Ltd. Apparatus for classifying and counting sheets. 3,710,936, Cl. 209-82.000.
Mobay Chemical Company: *See—*
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Mobil Oil Corporation: *See—*
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Donnelly, James J., 3,711,372.
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Mobley, Carroll E.; and Maringer, Robert E., to Battelle Development Corporation, The. Method of producing controlled length metal filaments. 3,710,842, Cl. 164-78.000.
Mochizuki, Hiroshi: *See—*
Nagano, Toshihiro; Suzuki, Matsuo; Hayashi, Isao; Kato, Takashi; Mochizuki, Hiroshi; Aoshima, Yasuo; Shibata, Kouji; and Takahashi, Toshiro, 3,711,313.
Moffa, Joseph: *See—*
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Moffatt, E. Marston, to United Aircraft Corporation. Shock wave generator. 3,711,061, Cl. 251-29.000.
Mogensen, Nils Peder. Sizing apparatus with free space above the separating system of obstacles. 3,710,940, Cl. 209-315.000.
Molby, Lloyd A., to LeTourneau, R. G., Inc. Adjustable self-aligning pivot bearing, and pin and socket employing same. 3,711,121, Cl. 280-400.000.
Moleculon Research Corporation: *See—*
Hook, Edwin O.; and Nichols, Larry D., 3,711,389.
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Moncrieff, Alexander D. F., to Bird Island, Inc. Gear making. 3,710,685, Cl. 90-3.000.
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Monsanto Chemicals Limited: *See—*
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Maier, Ludwig, 3,711,577.
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Miller, Robert E., 3,711,290.
Montecatini Edison S.p.A.: *See—*
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Montino, Franco; and Guerrieri, Franco, to Montecatini Edison S.p.A. Process for preparing finely particled nickel powder. 3,711,274, Cl. 75-.50a.
Moody, John K., to Harnischfeger Corporation. Self-adjusting power operated brake. 3,710,897, Cl. 188-75.000.
Mookherjee, Braja D.; Giacini, Christopher; Karoll, Elizabeth A.; and Vock, Manfred H., to International Flavors & Fragrances Inc. 2-Acetyl-3-ethylpyrazine and process for the preparation thereof. 3,711,482, Cl. 260-250.00r.
Mooney, Thomas: *See—*
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Moore, Joseph F.: *See—*
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Moore, William Ross, to Dow Chemical Company, The. Random copolymers of sulfur dioxide with allyl ether of polyoxyalkyleneglycols. 3,711,453, Cl. 260-79.30a.
Morales, Manuel F. Automatic card dispenser. 3,710,929, Cl. 206-39.000.
Moran, John Joseph, to Hycel, Inc. Optical analyzing means for automatic chemical testing apparatus. 3,711,206, Cl. 356-201.000.
Moreland, William C., II; Cobb, William R.; and Tyke, Charles R., to Westinghouse Electric Corporation. Magnetically coupled control for appliance. 3,711,672, Cl. 219-10.490.
Morello, Bartolomeo: *See—*
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Morgan Construction Company: *See—*
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Morgan, Thomas Edward; Kaminski, George Frank; and Mraz, Francis J., to International Telephone and Telegraph Corporation. Split wire guide. 3,710,483, Cl. 29-203.00d.
Morieras, Gilbert; and Sere de Lanauze, Michel, to CTA-Compagnie Industrielle de Textiles Artificiels et Synthetiques. Noncircular cable. 3,711,630, Cl. 174-119.000.
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Moroney, William J., to Microwave Associates, Inc. Low barrier height galium arsenide microwave schottky diodes using gold-germanium alloy. 3,711,745, Cl. 317-235.00r.
Morris, Carl H.; and Oliver, Henry N. Pneumatic oscillator apparatus. 3,710,815, Cl. 137-106.000.
Morris, Gerald H., Jr., to Hutton, Larry D. and Schlotterbeck, Paul W. Anti-glare sunshade. 3,710,392, Cl. 2-12.000.
Morrison, Ernest Albert: *See—*
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Innes, Robert; and Morrison, Ernest Albert, 3,710,613.
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Moschkau, George L.; and Miller, Arlin Lee, to Sterling Products Company, Inc. Windshield de-icer. 3,711,679, Cl. 219-227.000.
Moslo, Ernest P. Injection molding machine. 3,710,988, Cl. 222-404.000.
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Mott, George E., to Texaco Inc. Marine platform foundation structure. 3,710,580, Cl. 61-46.500.
Mraz, Francis J.: *See—*
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Muehleman, Russell N.: *See—*
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Muench, Paul W.: *See—*
Dillenbeck, Warren H.; Muench, Paul W.; and Walker, Elmo R., 3,710,585.

Muir, Earl B., to White Motor Corporation. Vehicle engine braking system. 3,710,908, Cl. 192-.084.
Muller, Dietrich, to Fried Krupp Gesellschaft mit beschrankter Haftung. Reflected-beam ranging system. 3,711,822, Cl. 340-3.00r.
Muller, Kurt; and Trevisani, Silvano, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Tracer projectile. 3,710,723, Cl. 102-87.000.
Muller, Marcel: *See—*
Bollag, Werner; Gutmann, Hugo; Hegedus, Balthasar; Kaiser, Ado; Langemann, Albert; Muller, Marcel; and Zeller, Paul, 3,711,543.
Mulu, Ernest, to A. T. I. Recreation, Inc., mesne. Convertible table for utility games and bumper pool. 3,711,099, Cl. 273-123.00r.
Murakami, Tadashi; Hiromoto, Takeshi; Soejima, Zenzo; Hamano, Toyosaburo; Hashimoto, Shinsuke; and Shibamoto, Shingo, to Nippon Steel Corporation. Method for altering the cross-sections of continuously cast metal pieces. 3,710,843, Cl. 164-82.000.
Muraoka, James S., to United States of America, Navy. Method of increasing tensile strength of plastic materials. 3,711,586, Cl. 264-88.000.
Murata, Koichiro: *See—*
Watanabe, Tadashi; Murata, Koichiro; Iwasawa, Naozumi; and Okinaga, Tsuyoshi, 3,711,434.
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Murfree, James A., Jr.; and Duncan, William A., to United States of America, Army. Catalytic bed coated with metal for gas generator. 3,711,427, Cl. 252-455.00r.
Murkes, Jakob, to Alfa-Laval AB. Apparatus for continuously separating a sludge-containing mixture of two liquids. 3,710,949, Cl. 210-522.000.
Murphy Chemical Company Limited, The: *See—*
Pianka, Max, 3,711,578.
Murphy, John C.: *See—*
Hills, Richard E.; Adams, John H.; Anderson, Lloyd E., Jr.; Bliss, Woodrow E., Jr.; Hamren, Fred W., Jr.; Honath, Harry F.; and Murphy, John C., 3,710,582.
Musgrave, Daniel D. Magazine loading guide. 3,710,497, Cl. 42-87.000.
Muta, Akinori; Itoda, Gyozo; Noro, Takanobu; and Yamazaki, Chieko, to Hitachi, Ltd. Use of yttria-magnesia mixtures to produce highly transparent sintered alumina bodies. 3,711,585, Cl. 264-65.000.
Nadella, Rueil-Malmaison: *See—*
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Nagano, Toshihiro; Suzuki, Matsuo; Hayashi, Isao; Kato, Takashi; Mochizuki, Hiroshi; Aoshima, Yasuo; Shibata, Kouji; and Takahashi, Toshiro, to Riken Lightmetal Industry Company, Limited and Kuboko Paint Company, Limited. Process for the deposition of resious films on aluminum-bearing substrates. 3,711,313, Cl. 117-49.000.
Naganuma, Hisao: *See—*
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Nagata, Makoto: *See—*
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Nagati, Rashed Naim, to Pennsylvania Engineering Corporation. Stabilized mounting for molten metal vessels. 3,711,077, Cl. 266-36.00p.
Nagy, Daniel Elmer, to American Cyanamid Company. Water-soluble cationic polymers and graft polymers. 3,711,573, Cl. 260-874.000.
Nakada, Masanori: *See—*
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Nakamura, Harutoki: *See—*
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Nakamura, Satoshi; and Umeda, Junichi, to Hitachi, Ltd. Response time controlled light emitting devices. 3,711,740, Cl. 315-246.000.
Nakamura, Shinichi: *See—*
Kameoka, Akio; Nakamura, Shinichi; and Kuriyagawa, Mamoru, 3,711,620.
Nakano, Junzo; Sumi, Yuichiro; and Nagata, Makoto, to Kokusaku Pulp Industry Co., Ltd., The. Digesting lignocellulosic material with sodium hydroxymethylsulfonate. 3,711,366, Cl. 162-24.000.
Nakata, Shinsaku: *See—*
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Nakayama, Kiyoshi; Tanaka, Haruo; and Kase, Hiroshi, to Kyowa Hakko Kogyo Co., Ltd. Process for producing L-threonine. 3,711,375, Cl. 195-29.000.
Nalco Chemical Company: *See—*
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Nappier, Henry A.: *See—*
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Narayanan, Venkatachala L., to Squibb, E. R., & Sons, Inc. Delta 2, alpha-adamantaneacetanilide derivative and related compounds. 3,711,538, Cl. 260-557.00b.
Nasta Industries, Inc.: *See—*
Spiegel, Norman, 3,710,509.
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National Cash Register, The: *See—*
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National Metal and Refining Company, Inc.: *See—*
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National Research Development Corporation: *See—*
Light, Leon Henry, 3,710,792.
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Neefe, Charles W. Corneal drug delivery method. 3,710,796, Cl. 128-260.000.
Neil, Peter C., to Standard Oil Company. Transporting and trimmer apparatus for plastic film having thermoformed articles therein. 3,711,005, Cl. 226-52.000.
Neill, John S.: *See—*
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Nelson, Warren Leonard, to AL E. & C. Ltd. Adsorption process for natural gas purification. 3,710,547, Cl. 55-58.000.
Nemoto, Kouji. Circuit for driving a moving element. 3,711,754, Cl. 318-126.000.
Neubert, Robert J.: *See—*
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Neumann, Herbert: *See—*
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Neumer, John F., to Du Pont de Nemours, E. I., and Company. Liquid for pad-bath dyeing containing glycol compound and boric acid or borax. 3,711,245, Cl. 8-21.000.
Nevin, John J.; and Dumire, Leo G., to Phelps Dodge Copper Products Corporation. Manufacture of coaxial cable. 3,710,440, Cl. 29-624.000.
New-Way Products Company: *See—*
Andreasen, Alfred C., 3,710,410.
Newell, George P.: *See—*
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Newkirk, Marc S.; and Falabella, Arnold G., to American Environmental Research Corporation. Fuel system. 3,710,770, Cl. 123-120.000.
Nichols, Larry D.: *See—*
Hook, Edwin O.; and Nichols, Larry D., 3,711,389.
Nichols, Richard A.; and Ulanovsky, Jack M., to Parker-Hannifin Corporation. Fuel tank inerting system. 3,710,549, Cl. 55-160.000.
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Niemand, Emil, to Robertshaw Controls Company. Timer construction means and system utilizing the same or the like. 3,711,727, Cl. 307-141.400.
Niemiec, Leo P. Snap lock plastic fencing. 3,711,066, Cl. 256-19.000.
Nier, Johannes, to Bosch, Robert, G.m.b.H. Semiconductor device and method of assembling the same. 3,711,752, Cl. 317-234.00r.
Niioka, Takeharu; Itoh, Noriji; and Ishigo, Hideyasu, to Tokyo Shibaura Electric Co., Ltd. Control device for a tape recorder for detecting the beginning of a desired program. 3,711,657, Cl. 179-100.20s.
Nikolaev, Petr Petrovich: *See—*
Funberg, Izrail Leibovich; Nikolaev, Petr Petrovich; Gora, Viktor Epifanovich; Gulenko, Nikolai Nikolaevich; Papko, Viktor Ivanovich; Rozhkov, Nikolai Alexandrovich; Kats, Elya Isaevich; and Krutogolov, Grigory Vasilievich, 3,710,869.
Nilssen, Ole K., to Motorola, Inc. Multi-channel magnetic tape head in which the core is shifted for positioning the pickup portions. 3,711,656, Cl. 179-100.20c.
Nippon Kogaku K.K.: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
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Nonnenmacher, Helmut; deceased (by Nonnenmacher, Ruth S. H.; heiress-in-law); Krabetz, Richard; Engelbach, Heinz; and Zinke-Allmang, Helmut, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of acrylic acid by oxidation of acrolein. 3,711,54, Cl. 260-530.000.

Nonnenmacher, Ruth S. H.: *See—*
Nonnenmacher, Helmut; Krabetz, Richard; Engelbach, Heinz; and Zinke-Allmang, Helmut, 3,711,540.
Nordine, Richard D., to Copystatics Manufacturing Corporation. Copying machine having early copy paper feed in multiple copy mode of operation. 3,711,198, Cl. 355-51.000.
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Nye, Norman H.; and Medkeff, Arthur T. Method to form elongate plastic articles. 3,711,589, Cl. 264-245.000.
Obata, Hiroichi. Butane gas lighter. 3,711,241, Cl. 431-344.000.
Obermayer, Arthur S.: *See—*
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O'Conner, James F.; and Black, Gordon L., to Ameron, Inc. Method of vibrating a mold case. 3,711,587, Cl. 264-71.000.
O'Connor, Anthony, to Vickers Limited. Microscope objectives. 3,711,186, Cl. 350-214.000.
O'Dell, Rawleigh D., 1/2 to O'Dell, Ulace J. Ladder platform attachment. 3,710,894, Cl. 182-106.000.
O'Dell, Ulace J.: *See—*
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Oertel, Harald: *See—*
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Ohyama, Isao: *See—*
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Oka, Shunzo; and Kitahara, Hisao, to Matsushita Electric Industrial Co., Ltd. Device for simultaneously controlling rotary shafts of a plurality of variable resistors. 3,711,811, Cl. 338-128.000.
Okano, Takeshi, to Fuji Shashin Film Kabushiki Kaisha. Cylindrical magazine retaining device. 3,711,172, Cl. 312-97.100.
Okano, Yasuyuki: *See—*
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Olday, Fred L. Method for slicing furs. 3,710,662, Cl. 83-20.000.
O'Leary, Paul C., 1/2 to Pulverizer, Bradley Company. Rock drill positioning machine. 3,711,047, Cl. 248-2.000.
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Oliver, Connie J.; and Gleason, Edward Hinsdale, to Sinclair-Hoppers Company. Floor polish composition having improved initial water and detergent resistance. 3,711,436, Cl. 260-28.50r.
Oliver, Henry N.: *See—*
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Pagella, Elio; and Guerci, Carlo, 3,710,659.
Pomella, Piero; and Alberico, Mario, 3,711,814.
Sottsass, Ettore, Jr., 3,711,175.
Olofson, Roy A.; and Yamamoto, Yasushi Stephen, to Research Corporation, mesne. Substituted and unsubstituted vinyloxycarbonyl groups as amino protecting groups in the synthesis of peptides. 3,711,458, Cl. 260-112.500.
Olson, Norman L.: *See—*
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Onori, Bruno. Cabinet door latch. 3,711,140, Cl. 292-87.000.
Oppliger, Hans R., to National Metal and Refining Company, Inc. High precision wide dynamic range viscous loss measuring apparatus. 3,710,614, Cl. 73-59.000.
Optical Coating Laboratory, Inc.: *See—*
Dolin, Stanley A.; Folch, Andres, Jr.; and Geiger, Dana F., 3,711,708.
Optical Research and Development Corporation: *See—*
Humphrey, William E., 3,711,178.
Optronics International, Inc.: *See—*
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Orbach, Max A. Lamp and mirror combination. 3,711,695, Cl. 240-4.200.
Orkin, Stanley S.; and Whitfield, Alan A., to Kacarb Products Corporation, mesne. Ceramic bearing. 3,711,171, Cl. 308-241.000.
Ornstein, Flushing Gerald: *See—*
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Orozco, Enrique H.; Asimor, Brian L.; and Sylvester, Edward C., to Orozco, Enrique H. and said Sylvester assor. to said Asimor, Brian L. Device for steering a vehicle over a fluid or semi-fluid surface. 3,711,108, Cl. 280-21.00r.
Orth, Dieter: *See—*
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Osborne, Keith J. Apparatus for shirinking plastic film over palletized loads. 3,710,550, Cl. 53-184.000.
Osborne, Thomas E., to Hewlett-Packard Company. Calculator and tester for use therewith. 3,711,690, Cl. 235-153.000.
Osieka, Hans; Koenig, Karl-Heinz; and Pommer, Ernst-Heinrich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Method of controlling fungi in plants and seeds using ortho-substituted benzoates and thiobenzoates. 3,711,614, Cl. 424-308.000.
Osorio, George. Fire extinguisher. 3,710,855, Cl. 169-26.000.
Ostermayer, Franz; and Renner, Ulrich, to Ciba-Geigy Corporation. 1-[p-(2-Aminoethyl)-phenyl]-pyrroles. 3,711,507, Cl. 260-326.900.
Otis Engineering Corporation: *See—*
Young, Carter R.; and James, Henry J., 3,710,862.
Otte, Eginhard; Schwenger, Gisela; and Schwenkel, Willi, to Bodenseewerk Perkin-Elmer & Co., GmbH. Device for sample injection in gas chromatographs. 3,710,626, Cl. 73-422.0gc.
Otteni, Hermann, to Siemens Aktiengesellschaft. Reversing pneumatic amplifier. 3,710,825, Cl. 137-625.600.
Overoye, Kenneth R.: *See—*
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Overton, Harold L. Method of locating anomalous zones of chemical activity in a well bore. 3,711,765, Cl. 324-1.000.
Owdom, Maurice R. Filter package. 3,710,930, Cl. 206-46.0fc.
Owens-Corning Fiberglas Corporation: *See—*
Benson, Gustav E.; and Potter, Douglas E., 3,710,461.
Owens-Illinois, Inc.: *See—*
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Ozaki, Nobuo, to Maeda Industries, Ltd. Method of producing a bicycle chain shifting device and the same produced thereby. 3,710,636, Cl. 74-217.00b.
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Pachmayr, Frank A.; Farrar, Jack R.; and Gerick, John, to Mershon Company. Firearm adjustable cheek piece. 3,710,496, Cl. 42-71.00r.
Pacific Utilities Supply Co.: *See—*
Grannis, Roland K., 3,711,049.
Packaline AG: *See—*
Smed, Preben, 3,711,143.
Packo, Joseph J. Method of sealing leaks in vessels and joints. 3,711,309, Cl. 117-2.00r.
Packo, Joseph J., mesne: *See—*
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Pagel, Armin B., to Carlin Corporation. Torque sensing instruments. 3,710,618, Cl. 73-136.00a.
Pagella, Elio; and Guerci, Carlo, to Olivetti, Ing., C., & C., S.p.A. Automatically controlled tool holding device. 3,710,659, Cl. 82-1.200.
Pall Corporation: *See—*
Rosenberg, David, 3,710,942.
Palmer, Richard Claxton, to RCA Corporation. Velocity adjusting system. 3,711,641, Cl. 178-6.6tc.
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Pantasote Company of New York, Inc., The: *See—*
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Papko, Viktor Ivanovich: *See—*
Funberg, Izrail Leibovich; Nikolaev, Petr Petrovich; Gora, Viktor Epifanovich; Gulenko, Nikolai Nikolaevich; Papko, Viktor Ivanovich; Rozhkov, Nikolai Alexandrovich; Kats, Elya Isaevich; and Krutogolov, Grigory Vasilievich, 3,710,869.
Park, James E. Pipeline monitoring system. 3,711,689, Cl. 235-151.340.
Park-Ohio Industries, Inc.: *See—*
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Parker, Frederick A.; and Soult, Charles J., to Biomarine Industries, Inc. Carbon dioxide scrubber and breathing diaphragm assembly for diving apparatus. 3,710,553, Cl. 55-316.000.
Parker-Hannifin Corporation: *See—*
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Parks, Charles A. Annular compression beam. 3,710,526, Cl. 52-223.00r.
Parry, Colin; and Round, Kenneth J., 1/2 to Atomic Energy of Canada Limited. Promethium sources. 3,711,326, Cl. 117-217.000.
Pass, Werner, to Gummiwerk Pass & Sohn. Grate. 3,710,530, Cl. 52-666.000.
Patsch, Manfred: *See—*
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Patterson, Earl Byron, to University of Illinois Foundation. Procedures for use of genic male sterility in production of commercial hybrid maize. 3,710,511, Cl. 47-58.000.
Paul, Bernt, to Siemens Aktiengesellschaft. Apparatus for detecting infrared radiation. 3,711,718, Cl. 250-210.000.
Paull, Michael H., to Photophysics, Inc. Pressure transfer mechanism. 3,711,197, Cl. 355-16.000.
Pawletko, Joseph P.: *See—*
Kroft, John D.; Pawletko, Joseph P.; Peters, Francis E.; and Yount, Carl T., 3,711,804.
Payne, Charles C.; and Vossos, Peter H., to Nalco Chemical Company. Compositions containing aqueous anionic silica sol and non-gelling flocculating agent. 3,711,416, Cl. 252-313.00s.
Peake, Murray W., to United States of America, Army, mesne. Spurious signals and intermodulation products detection enhancement circuit. 3,711,769, Cl. 324-57.00n.
Pearson, Ronald K. Fluid distribution and injection systems. 3,710,574, Cl. 60-258.000.
Peart, Edward Lynn, to Sybron Corporation. Rotatable eartip stethoscope. 3,710,888, Cl. 181-24.000.
Pedrazzoli, Andrea; and Dall'Asta, Leone, to MIDY. Derivatives of N-methylpiperazine. 3,711,484, Cl. 260-268.00r.
Pell, Laurence W.: *See—*
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Pellerin Milnor Corporation: *See—*
Pellerin, Norvin L., 3,710,600.
Pellerin, Norvin L., to Pellerin Milnor Corporation. Slow-down circuit for tape type washing machine control. 3,710,600, Cl. 68-12.00r.
Peltier, Henri; Bailly, Roger; and Chatourel, Pierre, to Regie Nationale des Usines Renault and Automobiles Peugeot. Centrifugal casting devices. 3,710,848, Cl. 164-293.000.
Pena, Jose Baya. Self-propelled fishing float with line release mechanism. 3,710,500, Cl. 42-17.500.
Penner, Bruce W.; and Splatt, Kenneth W. Vehicle security system. 3,711,117, Cl. 280-150.00r.
Pennsylvania Engineering Corporation: *See—*
Nagati, Rashed Naim, 3,711,077.
Pennwalt Corporation: *See—*
Kulischenko, Walter; and Callahan, John W., 3,710,515.
Penumatic Scale Corporation: *See—*
Sterling, Walter S., 3,710,920.
Perkin-Elmer Corporation, The: *See—*
Bohler, Walter, 3,711,774.
Perks, Joseph, to Westhershields Limited. Hinged deflectors for sliding roofs. 3,711,150, Cl. 296-137.00e.
Perrero, George; and Weller, Carroll E., to Avco Corporation. VHF and microwave amplifier having improved stability and controllable gain. 3,711,782, Cl. 330-30.00r.
Perrin, Louis R.F.J.: *See—*
Esseiva, Roger Marcel; Perrin, Louis R.F.J.; and Romang, Lucien Willy, 3,711,311.
Perry, John C. Carburetor fuel metering valve. 3,711,068, Cl. 261-41.00b.
Persson Engineering Company: *See—*
Shearer, Robert B., 3,710,903.
Persson, Per Lage, to AB Perma System. Method for mounting the slats of a venetian blind in the slat support cords and means for carrying out the method. 3,710,464, Cl. 29-24.500.
Peters, Francis E.: *See—*
Kroft, John D.; Pawletko, Joseph P.; Peters, Francis E.; and Yount, Carl T., 3,711,804.
Petersen, Donald H.; and Schwemer, Warren C., to Advanced Technology Center, Inc., mesne. Plasma heating method. 3,711,615, Cl. 13-1.000.
Petersen, John Valdemar Brammer; and Clauson-Kaas, Niels, to Ciba-Geigy Corporation. Method for preparing 2,3-pyridinediol. 3,711,490, Cl. 260-297.00r.
Peterson, Walter Raymond, to RCA Corporation. Overcurrent protection circuit for a voltage regulator. 3,711,763, Cl. 323-9.000.
Peterson, Warren J., to Joerns Furniture Company. Electric hospital bed. 3,710,404, Cl. 5-68.000.
Petersson, Ralf Krister Ebbe: *See—*
Holmberg, Roland Bengt; and Petersson, Ralf Krister Ebbe, 3,711,122.
Petiet, Jakobus, to N.V. Leidsche Apparatenfabriek. Selection apparatus. 3,710,921, Cl. 198-33.0aa.
Petro-Tex Chemical Corporation: *See—*
Tschopp, Lloyd D.; and Funkhouser, Terry D., 3,711,569.
Petrolite Corporation: *See—*
Bansbich, Paul L., 3,710,867.
Redmore, Derek, 3,711,403.
Redmore, Derek, 3,711,404.
Wilson, Homer M., 3,711,770.
Pfeffer, Josef: *See—*
Meyer, Joachim; and Pfeffer, Josef, 3,710,857.
Pfeifer, Charles W.; and Bobear, William J., to General Electric Company. Flame retardant compositions. 3,711,520, Cl. 260-37.0sb.
Pfeiffer, Norman O., to Little Wonder, Inc. Cordless electric hand tiller. 3,710,870, Cl. 172-40.000.
Pfizer Inc.: *See—*
Lombardino, Joseph G., 3,711,489.
Pharo, Wellington B.: *See—*
Glendinning, William B.; and Pharo, Wellington B., 3,711,324.
Phelps Dodge Copper Products Corporation: *See—*
Nevin, John J.; and Dumire, Leo G., 3,710,440.
Phelps, Malcolm T., to Weber-Knapp Company. Door mounting assembly. 3,710,416, Cl. 16-135.000.
Phelps, Mont Meredith, to Du Pont de Nemours, E. I., and Company. Shipping pallet. 3,710,732, Cl. 108-51.000.
Philco-Ford Corporation: *See—*
Forkner, John F., 3,711,788.
Schultz, Roger T.; Vickland, Jack M.; and Sickler, Raymond E., 3,711,055.
Phillips, Lee V.; and Cahoy, Roger P., to Gulf Research and Development Company. Process for manufacturing cyclopropylamine. 3,711,549, Cl. 260-563.00r.
Phillips Petroleum Company: *See—*
Ashe, Benedict H., Jr.; and Fox, Homer M., 3,711,396.
Ayres, Charles A., 3,711,457.
Chester, Milton L.; and Sanders, Billy J., 3,711,682.
Deutsch, Peter R., 3,711,590.
Johnson, Marvin M.; and Tabler, Donald C., 3,711,422.
Trepka, William J.; and Sonnenfeld, Richard J., 3,711,424.
Photophysics, Inc.: *See—*
Paull, Michael H., 3,711,197.
Pianka, Max, to Murphy Chemical Company Limited, The. (N-Alkoxycarbonyl-n-alkylcarbamoyl) dialkyl phosphono-thioates and thiolothionates. 3,711,578, Cl. 260-942.000.
Picard, Claude Wolfgang: *See—*
Bream, John B.; Picard, Claude Wolfgang; and Read, David Michael, 3,711,505.
Piech, Ferdinand K.; and Weber, Rolf, to Porsche, Dr.-Ing. H.c.F., K.G., Firma. Mushroom valve, especially for internal combustion engines. 3,710,773, Cl. 123-188.0aa.
Piech, Ferdinand K., to Porsche, Dr.-Ing. H.c.F., K.G., Firma. Motor vehicle, especially passenger motor vehicle. 3,710,884, Cl. 180-54.00r.
Piemont, Georges. Corrugated edging for an endless conveyor. 3,711,588, Cl. 264-231.000.
Pierce, Edward J.; and Doucet, Daniel R., to General Connector. Tight angle multi-contact electrical connector. 3,711,815, Cl. 339-90.00r.
Pierce, Everette M., to United States of America, Army. Processing of crosslinked nitrocellulose propellants. 3,711,344, Cl. 149-19.000.
Pinfari, Italo; and Begotti, Pino, to F.LLI Pinfari S.r.l. Apparatus for performing embarking and disembarking operations in amusement park attractions. 3,710,725, Cl. 104-35.000.

Pinkham, Carl W., Jr., to Consolidated Foods Corporation. System for preventing electrostatic spark discharge from a person operating an electrical appliance. 3,711,742, Cl. 317-2.00r.

Pioneer Electronic Corporation: *See—*
Ando, Shizuo, 3,711,649.

Piret, Jean, to Regie Nationale des Usines Renault and Automobiles Peugeot. Planetary gear-change-speed transmission mechanisms. 3,710,650, Cl. 74-763.000.

Pitner, Alfred, 1/2 to Nadella, Rueil-Malmaison. Method of making a composite bearing ring. 3,710,471, Cl. 29-148.40r.

Pitts, Charles A., to Dow Chemical Company, The. Drag block and slip assembly. 3,710,866, Cl. 166-216.000.

Pittsburgh-Des Moines Steel Company: *See—*
Hills, Richard E.; Adams, John H.; Anderson, Lloyd E., Jr.; Bliss, Woodrow E., Jr.; Hamren, Fred W., Jr.; Honath, Harry F.; and Murphy, John C., 3,710,582.

Plank, Robert E.; and Rutkowski, Michael D., to Biomarine Industries, Inc. Galvanic cells. 3,711,395, Cl. 204-195.00p.

Plasteel Industries Incorporated, mesne: *See—*
Story, William K., 3,710,733.

Plastic Coating Corporation, The: *See—*
Hakanson, Nils L., 3,710,755.

Plempel, Manfred: *See—*
Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, 3,711,498.
Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, 3,711,499.
Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, 3,711,500.
Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, 3,711,501.
Draber, Wilfried; Timmler, Helmut; Buchel, Karl-Heinz; and Plempel, Manfred, 3,711,487.

Plessey Company Limited, The: *See—*
Blomley, Peter F., 3,711,781.

Plumstead, Richard J., to Esso Research and Engineering Company. Incorporating lithium salicylate or the like into a grease. 3,711,407, Cl. 252-41.000.

Pluschke, Manfred, to Kraftwerk Union Aktiengesellschaft. Apparatus for supplying cooling water to the cooling channels of the rotors of electrical machines. 3,711,731, Cl. 310-53.000.

Polaroid Corporation: *See—*
Land, Edwin H., 3,711,192.
Schuler, Norman W., 3,711,417.
Young, Richard W., 3,711,283.

Polette, Melvin; and Newell, George P. Rotary edger for use with power driven lawn mower. 3,710,563, Cl. 56-16.900.

Polk, Albert S., Jr., to United States of America, Navy. Pressure actuated spring biased latch. 3,711,139, Cl. 292-37.000.

Pollution Rectifiers Corporation: *See—*
Sved, John R., 3,710,551.

Polovets, Eduard Jurievich: *See—*
Koblents, Mark Germanovich; Mitskevich, Gennady Feodosievich; Polovets, Eduard Jurievich; and Zhevago, Anatoly Fedorovich, 3,711,749.

Poly-Traction Inc.: *See—*
Chaumont, Guy-Noel, 3,711,164.

Polychrome Corporation: *See—*
Deutsch, Albert S.; and Poppo, Joseph M., 3,711,285.

Polytype AG: *See—*
Demierre, Jean, 3,710,712.

Pomella, Piero; and Alberico, Mario, to Olivetti, Ing. C., & C., S.p.A. Printing circuit mounting structure. 3,711,814, Cl. 339-65.000.

Pommer, Ernst-Heinrich: *See—*
Osieka, Hans; Koenig, Karl-Heinz; and Pommer, Ernst-Heinrich, 3,711,614.

Pond, John E. Bread slice coating applicator. 3,710,754, Cl. 118-13.000.

Pool, Danny L.: *See—*
Gomes, John M.; Pool, Danny L.; and Wong, Morton M., 3,711,386.

Pope, Hermon L., Jr.: *See—*
Brennan, James, Jr.; Pope, Hermon L., Jr.; and Boren, Donald F., 3,710,913.

Poppo, Joseph M.: *See—*
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Population Council Inc., The: *See—*
Tatum, Howard J.; Jernberg, Nils A.; and Braun, John, 3,711,035.

Porsche, Dr.-Ing. H.c.F., K.G., Firma: *See—*
Piech, Ferdinand K.; and Weber, Rolf, 3,710,773.
Piech, Ferdinand K., 3,710,884.

Porter, James M., to Trane Company, The. Double effect absorption heating and cooling system. 3,710,852, Cl. 165-62.000.

Porter, Lawrence C.: *See—*
Chess, Samuel; and Porter, Lawrence C., 3,711,231.

Porter, Wilbur Arthur, to Texas Instruments, Incorporated. Continuous deposition system. 3,710,757, Cl. 118-48.000.

Portoulas, Panayiotis G., to Warwick Electronics, Inc. Chroma-burst separator and amplifier circuit. 3,711,634, Cl. 178-5.4sy.

Potter, Douglas E.: *See—*
Benson, Gustav E.; and Potter, Douglas E., 3,710,461.

Pottorff, Donald R.; and Wright, William E., to Kidde, Walter, & Company, Inc., mesne. Mobile crane hook block storage compartment. 3,710,950, Cl. 212-1.000.

Poveromo, Melvin D. Adjustable denture attachment. 3,710,446, Cl. 32-5.000.

Powell, Johnnie L.: *See—*
Birchall, Thomas D.; and Powell, Johnnie L., 3,710,753.

Poynter, Donald B. Animated, drink mixing mannequin. 3,710,507, Cl. 46-136.000.

PPG Industries, Inc.: *See—*
Anthony, Paul P., 3,711,382.
Kelly, Joseph B., 3,710,516.
Martinsons, Aleksandrs, 3,711,397.

Precision Cutting Machine Co., Ltd.: *See—*
Koyano, Nobushige; Hattori, Tadashi; and Kidowaki, Yoshimasa, 3,711,716.

Pretorius, Yarl: *See—*
Sirpak, Casey R.; and Pretorius, Yarl, 3,711,152.

Pretzer, Wolfgang; and Ribka, Joachim, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Brunning. Monoazo dyestuffs containing an acetylamino 2,4-dioxo-1,2,3,4-tetrahydroquinazoline. 3,711,461, Cl. 260-154.000.

Price, Charles E.: *See—*
Kipple, Harry P.; Price, Charles E.; and Leader, Adam M., 3,710,437.

Priem, Jan Jozef: *See—*
Van Paesschen, August Jean; Van Gossum, Lucien Janbaptist; and Priem, Jan Jozef, 3,711,284.

Prince, Darryll G. Knife gate valve. 3,710,816, Cl. 137-242.000.

Prince, Ernest A. Locking device for car stick shift. 3,710,606, Cl. 70-203.000.

Procter & Gamble Company, The: *See—*
Marsan, Mario S., 3,710,797.
Pultinas, Edmund P., Jr.; and Temple, Robert D., 3,711,523.
Robson, Peter; and Hardy, Frederick Edward, 3,711,413.
Strobel, Rudolf G.K.; and Smith, James P., 3,711,297.

Proctor, Sidney E.; and Carden, John C., to Ginda Inc. Drive means for cutter chain jib. 3,711,161, Cl. 299-82.000.

Properzi, Ilario. Continuous casting apparatus. 3,710,846, Cl. 164-278.000.

Proskurovsky, Filipp Yakovlevich: *See—*
Turetsky, Lazar Isaakovich; Gryzlov, Anatoly Grigorievich; Proskurovsky, Filipp Yakovlevich; Lomachenko, Gennady Nikolaevich; and Ageev, Nikolai Ivanovich, 3,710,821.

Pryor, Clyde Robert: *See—*
Hollingsead, Robert A.; and Pryor, Clyde Robert, 3,710,476.

Puckett, George W., to Tag-Along Corporation. Helper axle assembly for vehicles. 3,711,112, Cl. 280-81.00r.

Pugh, John, to United Kingdom Atomic Energy Authority. Charge/discharge arrangements for nuclear reactor. 3,711,369, Cl. 176-30.000.

Pullman Incorporated: *See—*
Austgen, Kenneth J.; Corbett, Richard A.; and Schuller, James J., 3,710,730.
Schuller, James J., 3,710,729.
Spence, John H.; Yang, Tung Han; and Anderson, Steven A., 3,710,952.

Pultinas, Edmund P., Jr.; and Temple, Robert D., to Procter & Gamble Company, The. Ocidation of vicinal glycols in the presence of organic peroxides and cobaltous compounds. 3,711,523, Cl. 260-413.000.

Pulverizer, Bradley Company: *See—*
O'Leary, Paul C., 3,711,047.

Purt, Gustav A., to Cerberus AG. Method for sealing the cutting or separation surfaces of radioactive foils. 3,710,537, Cl. 53-39.000.

Pye, David S.; Fischer, Paul W.; and Gallus, Julius P., to Union Oil Company of California. Low fluid loss well treating composition and method. 3,711,405, Cl. 252-8.55r.

Pyle, James J., to General Electric Company. Metal-clad laminates. 3,711,365, Cl. 161-216.000.

Pyper, Paul M.: *See—*
Seccombe, Robert J.; Pyper, Paul M.; and Treible, Edwin S., Jr., 3,710,874.

Quaker Oats Company, The: *See—*
Van Sice, David P.; and Martin, Paul A., 3,710,668.

Quantum Corporation, The: *See—*
Werbell, Mitchell L., III, 3,710,679.

Quattlebaum, Walter J.: *See—*
Willis, David M.; Young, William O., Jr.; and Quattlebaum, Walter J., 3,710,431.

Quick, James E., to United States of America, Navy. Highly fluorinated alkyl esters of trimellitic acid anhydride and method for their production. 3,711,514, Cl. 260-346.300.

Quincy, Roger B., Jr.: *See—*
Strum, Bernard J.; Quincy, Roger B., Jr.; and Butler, Charles T., 3,711,600.

Quiogue, Virgilio J., to Burroughs Corporation. Monostable multivibrator having output pulser dependent upon input pulse widths. 3,711,729, Cl. 307-273.000.

R. I. Patents, Inc.: *See—*
Margave, John L.; Bautista, Renato G.; Ficalora, Peter J.; and Badachhape, Ramachandra B., 3,711,595.

R. W. Transmissions Limited: *See—*
Stranger, Donald Arthur; Yates, Frank; and Senior, Jack, 3,710,640.

Rabjohn, Rodney R., to Medidyne, Inc. Intermittent traction apparatus. 3,710,787, Cl. 128-75.000.

Raccanelli, Mirco: *See—*
Galvagni, Alighiero; Raccanelli, Mirco; and Eccettuato, Vittorio, 3,711,843.
Raevsky, Georgy Vladimirovich; Biletsky, Semen Mikhailovich; and Burmenko, Eduard Jurievich, to Institut Elektrosvarki Imeni E. O. Patona Akademii Nauk Ukrainskoi SSR. Supporting device of rotary furnaces. 3,711,075, Cl. 263-33.00r.
Raffa, Angelo M. Duct bank with coupling. 3,711,127, Cl. 285-137.00r.
Ralston Purina Company: *See—*
Hawley, Robert L., 3,711,304.
Ramback, Carl-Gustaf; and Ericsson, Nils Olof, to Aktiebolaget Karlstads Mekaniska Werkstad. Marine propeller with removable blades. 3,711,220, Cl. 416-146.000.
Rampel, Guy, to General Electric Company. Method of making an improved electrode for dischargeable cell. 3,711,331, Cl. 136-6.000.
Ramsden, Hugh E., to Esso Research and Engineering Company. Process for the preparation of unsaturated hydrocarbons and unsaturated oxygenated compounds. 3,711,560, Cl. 260-632.00b.
Ranco Incorporated: *See—*
Stafford, Joseph H.; and Brooks, Robert E., 3,711,810.
Randall, David I.: *See—*
Field, Nathan D.; Randall, David I.; and Vogel, Calvin, 3,711,541.
Randall, David I.; and Wynn, Robert W., to GAF Corporation. Cyclic diamides of 2-chloroethyl phosphonic acid as plant growth regulants. 3,711,272, Cl. 71-86.000.
Rapata, George M., to Illinois Tool Works Inc. Container carrier package. 3,711,145, Cl. 294-87.200.
Rathbun, Charles H., to M & W Gear Company. Grain dryer with improved grain deflector. 3,710,449, Cl. 34-65.000.
RCA Corporation: *See—*
Fitzgerald, William Vincent, Jr.; and Lemmon, Richard Charles, 3,711,738.
Kryder, Robert Allen, 3,711,720.
Palmer, Richard Claxton, 3,711,641.
Peterson, Walter Raymond, 3,711,763.
Schopp, James Conrad, 3,711,001.
Stachejko, Vitaly, 3,711,793.
Read, David Michael: *See—*
Bream, John B.; Picard, Claude Wolfgang; and Read, David Michael, 3,711,505.
Reckdahl, Segwald J.; and Folske, Donald W., to Minnesota Mining and Manufacturing Company. Answer sheets. 3,710,457, Cl. 35-48.00a.
Redman, Howard E.; and Kalning, Frederick E., to Mathewson Corporation. Mattress handling apparatus. 3,710,955, Cl. 214-1.00q.
Redmore, Derek, to Petrolite Corporation. Corrosion inhibitors employing phosphate esters of cyclic amidines. 3,711,403, Cl. 252-8.55e.
Redmore, Derek, to Petrolite Corporation. Use of phosphoramidates of cyclic amidines as corrosion inhibitors. 3,711,404, Cl. 252-8.55e.
Redon, Michel: *See—*
Giraud, Pierre; and Redon, Michel, 3,711,851.
Reed Manufacturing Company: *See—*
Bjalme, Bengt G.; and Buhl, Robert E., 3,710,428.
Reed, Robert D.: *See—*
Zink, John Smith; Goodnight, Hershel; and Reed, Robert D., 3,711,243.
Reed Toys Incorporated: *See—*
Begley, Thomas J., 3,711,097.
Reeder, George C., Jr., to Westinghouse Electric Corporation. Monopulse radar antenna structure. 3,711,858, Cl. 343-771.000.
Rees, Thomas C.: *See—*
Foster, Harold M.; Rees, Thomas C.; and Spencer, Floyd G., 3,711,552.
Reeve, John Edwin, to Thorn Electrical Industries Limited. Drive mechanism. 3,710,639, Cl. 74-393.000.
Reeves, Willis D. Eyelid support for invalids. 3,710,788, Cl. 128-76.500.
Reforzo, Jean Baptiste Marie, to Societe Nationale Industrielle Aerospatiale. Automatic servo system for electric cable marking machines. 3,711,757, Cl. 313-600.000.
Regel, Erik: *See—*
Buchel, Karl Heinz; Grewe, Ferdinand; Scheinpflug, Hans; Kaspers, Helmut; and Regel, Erik, 3,711,502.
Regel, Erik K.: *See—*
Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, 3,711,498.
Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, 3,711,499.
Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, 3,711,500.
Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, 3,711,501.
Regie Nationale des Usines Renault: *See—*
Peltier, Henri; Bailly, Roger; and Chatourel, Pierre, 3,710,848.
Piret, Jean, 3,710,650.
Reid, John E., Sr.: *See—*
Reid, John E., Sr.; and Muehleman, Russell N., 3,710,671.
Reid, John E., Sr.; and Muehleman, Russell N., to Reid, John E., Sr. Note and pitch teaching machine. 3,710,671, Cl. 84-477.00r.
Reid, Ronald E., to Auto Safety, Inc. Combination tool. 3,710,407, Cl. 7-8.100.
Reilly, James J., Jr.; and Wiswall, Richard H., Jr., to United States of America, Atomic Energy Commission. Enriching with heavy hydrogen isotopes. 3,711,601, Cl. 423-648.000.
Reinhard, Paul. Ski training apparatus. 3,711,089, Cl. 272-57.00b.
Rem Research, Inc.: *See—*
Spiteri, Joseph, 3,711,704.
Rempfer, Paul S.; Robertson, Alan J.; Stevenson, Lloyd E.; and Koziol, Joseph S., Jr., to United States of America, National Aeronautics and Space Administration. Aircraft control system. 3,711,042, Cl. 244-77.00d.
Rench, Thomas R., to Case, J. I., Company. Control for fluid ram. 3,710,687, Cl. 91-363.00r.
Renk, ERnest: *See—*
Lehmann, Claude; and Renk, ERnest, 3,711,609.
Renner, Ulrich: *See—*
Ostermayer, Franz; and Renner, Ulrich, 3,711,507.
Reschke, Reinhold, to Berstorff, Hermann, Maschinenbau G.m.b.H. Method of making multi-ply conveyor belting. 3,711,348, Cl. 156-137.000.
Research and Safety Devices Corporation: *See—*
Elfline, Robert J., 3,710,970.
Research Corporation: *See—*
Bolasny, Robert E., 3,711,743.
Johnson, William H., 3,710,803.
Research Corporation, mesne: *See—*
Olofson, Roy A.; and Yamamoto, Yasushi Stephen, 3,711,458.
Research Laboratories of Australia Pty. Limited: *See—*
Wright, Robert J., 3,711,710.
Resistoflex Corporation: *See—*
Nickerson, Harvey R., 3,711,132.
Revny, Alexander. Shoe lace securing apparatus. 3,710,486, Cl. 36-50.000.
Reynard, Remi; Tindy, Roger; and Daniel, Edmond, to Institut Francais du Petrole des Carburants et Lubrifiants. Surface apparatus for handling an elastic column. 3,711,000, Cl. 226-8.000.
Reynolds, Joe D.; and Cannon, Kenneth V., to Federal Sign and Signal Corporation. Parallel alarm circuit having series supervision. 3,711,854, Cl. 340-409.000.
Reynolds Metals Company: *See—*
Wong, Lip F., 3,710,581.
Rheinmetall GmbH: *See—*
Kaltmann, Hans-Joachim, 3,710,683.
Rhone-Poulenc S.A.: *See—*
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Ribka, Joachim: *See—*
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Ricciardi, Ronald J. Plural auger material handling blending system. 3,710,983, Cl. 222-141.000.
Rice, Joe R., to General Electric Company. Integral tubing and/or electrical lead support and mounting pad for gas turbine engine controls and accessories. 3,710,568, Cl. 60-39.31r.
Rich, Leonard G.; and Blake, Dale G., to Gerber Scientific Instrument Company, The. Optical line follower. 3,711,717, Cl. 250-202.000.
Richert, Walter J., to AMF Incorporated. Flat pack reed relays. 3,711,798, Cl. 335-153.000.
Richter, Helmut: *See—*
Von Bogdandy, Ludwig; Richter, Helmut; and Forster, Eckerhard, 3,711,277.
Richter, Robert D., to Tridair Industries. Door structure for cargo container. 3,710,513, Cl. 49-464.000.
Rico, Edward H.; and Jaeger, Joseph H. Hydropneumatic massage equipment. 3,710,786, Cl. 128-66.000.
Riedberger, Jacques H.; and Ezavin, Rene M. Building structures. 3,710,528, Cl. 52-236.000.
Riegel, Peter S., to Gilbert and Barker Manufacturing Company. Automatic trip fill nozzle. 3,710,831, Cl. 141-207.000.
Riken Lightmetal Industry Company, Limited: *See—*
Nagano, Toshihiro; Suzuki, Matsuo; Hayashi, Isao; Kato, Takashi; Mochizuki, Hiroshi; Aoshima, Yasuo; Shibata, Kouji; and Takahashi, Toshiro, 3,711,313.
Rimmer, Michael J.: *See—*
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Ringland, Kenneth D., to Central Screw Company. Self-drilling and thread-forming screw. 3,710,676, Cl. 85-41.000.
Rinke, Heinrich: *See—*
Thoma, Wilhelm; Oertel, Harald; and Rinke, Heinrich, 3,711,443.
Rinker, Clark I. Three-phase engine apparatus. 3,710,569, Cl. 60-39.610.
Rinnai Kabushiki Kaisha: *See—*
Tamada, Kazumi; and Takase, Tadayoshi, 3,710,775.
Rizzo, Pantaleone L. Folding motorcycle or the like. 3,710,883, Cl. 180-33.000.
Roach, James D.: *See—*
Boyd, Charles L.; and Roach, James D., 3,710,623.
Robatel S.L.P.I.: *See—*
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Robertshaw Controls Company: *See—*
Kreuter, Kenneth G., 3,711,226.
Niemand, Emil, 3,711,727.
Scott, Douglas R., 3,711,018.
Robertson, Alan J.: *See—*
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Robin, Jean: *See—*
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Robinson, Charles C.: *See—*
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Robinson, Charles C.; Graf, Robert E.; Young , Robert W.; and Sproul, Merrill F., to American Optical Corporation. Method for producing a Faraday rotation glass having a high verdet constant. 3,711,264, Cl. 65-134.000.
Robinson, Derek Gilbert, to Imperial Chemical Industries, Limited. Imitation sheepskin fabric. 3,710,462, Cl. 28-72.00p.
Robson, Peter; and Hardy, Frederick Edward, to Procter & Gamble Company, The. Novel bleaching compounds. 3,711,413, Cl. 252-99.000.
Rochelle, James M.: *See—*
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Rohm & Haas Company: *See—*
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Rohr, Wolfgang; Fischer, Adolf; and Zschocke, Albrecht, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Thiadiazolidinediones. 3,711,492, Cl. 260-302.00d.
Rolamite Incorporated: *See—*
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Rosenberg, David, to Pall Corporation. Valve for fluid lines and structures containing the same. 3,710,942, Cl. 210-136.000.
Rosi, David; Collins, Joseph C.; and Miller, Theodore C., to Sterling Drug Inc. Preparation of 1-(aminoalkylamino)-4-hydroxymethylthioxanthen-9-ones. 3,711,512, Cl. 260-328.000.
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Roth, Herman. Cutter device with illuminated cutting blade. 3,710,445, Cl. 30-341.000.
Rothert, Horst; and Schumacher, Rolf, to Fischer, Karl, Apparate-u. Rohrleitungsbau and Societe Chimique des Charbonnages SCC. Apparatus for synthesis of formaldehyde. 3,711,253, Cl. 23-288.00k.
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Roy, Ashim Chandra. Composition and method for the detection of uric acid. 3,711,252, Cl. 23-253.0tp.
Roy, Joseph Gerald, to Union Carbide Corporation. Method and apparatus for incineration of thermoplastic materials. 3,710,739, Cl. 110-18.00r.
Royal Metal Corporation: *See—*
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Rubens, Louis C., to Dow Chemical Company, The. Expandable copolymers of α-olefins and α,β-monoethylenically unsaturated carboxylic acid. 3,711,430, Cl. 260-2.50b.
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Ruetman, Sven H., to Dow Chemical Company, The. Synthesis of perchlorinated cyano compounds. 3,711,480, Cl. 260-250.00r.
Rulo, Ralph P. Welding and brazing devices. 3,711,019, Cl. 228-56.000.
Rush, Hugh M.; and Gerard, Milan E., to Rohr Corporation. Holographic testing apparatus. 3,711,202, Cl. 356-109.000.
Russ, Paul E., Sr., to Gates Rubber Company, The. Drive system for a flexible track. 3,711,165, Cl. 305-35.0eb.
Russell, Carl D. End of page signalling device. 3,710,916, Cl. 197-189.000.
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Rylands, Patrick, to Rosedale Industries Limited. Plaything. 3,710,504, Cl. 46-1.00r.
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Sahrbacker, Edward V., to Lucerne Products, Inc. Bell-crank lever trigger switch with trigger depression adjustment means. 3,711,666, Cl. 200-157.000.
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Salvade, Gennaro, to Bobst, J., & Fils, S. A. Device for aligning sheets of material in stacks. 3,711,088, Cl. 271-89.000.
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Sawyer, Arthur W.; and Csejka, David A., to Olin Corporation. Low water-sensitive hydraulic fluids containing borate esters and monoethanolamine. 3,711,411, Cl. 252-78.000.
Sawyer, Arthur W.; and Csejka, David A., to Olin Corporation. Low-water sensitive hydraulic fluids containing borate esters and formals. 3,711,412, Cl. 252-78.000.
Sawyer, Ernest Robert, to Calgon Corporation. Welded connectors for tubular separator module. 3,710,946, Cl. 210-321.000.
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Schickel, Manfred; Sussenbach, Helmut; and Eichhorst, Ingo, to Licentia Patent-Verwaltungs-GmbH. Method of making contact point coating for relay contacts. 3,711,383, Cl. 204-29.000.
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Schmitz, Albert A. Vane-type fluid pump. 3,711,227, Cl. 418-31.000.
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Schoffmann, Rudolf, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Elastically deformable curved supporting and guiding construction for cast bars. 3,710,847, Cl. 164-282.000.
Schopp, James Conrad, to RCA Corporation. Web position detector using temperature sensing elements. 3,711,001, Cl. 226-19.000.
Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, to Farbenfabriken Bayer Aktiengesellschaft. N-Isopropyl-phosphoroamido-thioates. 3,711,582, Cl. 260-954.000.
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Shick, Philip E.; and Flood, William H., to Owens-Illinois, Inc., mesne. Fluidized process for regeneration of chemicals from sulfite pulping process. 3,711,593, Cl. 423-207.000.
Shideler, Paul J.: *See—*
Koehler, Albert T.; Shideler, Paul J.; and Dohogne, Linus E., 3,710,710.
Shields, Theodore Curtis, to Union Carbide Corporation. Methy 2-hydroxyethyl methyl (methylol) phosphinates and process for their production. 3,711,579, Cl. 260-953.000.
Shields, Walter A. Recessed diaphragm with annular grooves for hypodermic syringes. 3,710,794, Cl. 128-218.0nv.
Shimasaki, Nobuhiko: *See—*
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Shimizu, Yukio: *See—*
Tamaki, Einosuke; Kobari, Masao; Miyanowaki, Fumihiro; Kato, Kunio; Nishida, Ko; and Shimizu, Yukio, 3,710,805.
Shinn, Jeffrey N.; and Woodson, Carl W., to General Electric Company. Bourbon tube fluidic transducer. 3,710,814, Cl. 137-83.000.
Shinozaki, Mamoru: *See—*
Endo, Masaaki; Miura, Mituo; and Shinozaki, Mamoru, 3,710,878.
Shiraki, Hiroshi; Hara, Yoshiaki; and Iguchi, Masaaki, to Nippon Steel Corporation. Method of cooling cut-off valve for high-temperature corrosive gas. 3,710,810, Cl. 137-1.000.
Show, Woo Foung, to Bell Telephone Laboratories, Incorporated. Single wall magnetic domain logic arrangement. 3,711,842, Cl. 340-174.0tf.
Sickler, Raymond E.: *See—*
Schultz, Roger T.; Vickland, Jack M.; and Sickler, Raymond E., 3,711,055.
Siddall, John B., to Zoecon Corporation. Aliphatic ethers and thio compounds. 3,711,516, Cl. 260-340.500.
Siddall, John B., to Zoecon Corporation. Quaternary alkyl ethers of methylenediodioxyphenyl compounds. 3,711,517, Cl. 260-340.500.
Siddall, John B.; and Calamie, Jean. Dihalocyclopropyl substituted aliphatic amines. 3,711,547, Cl. 260-563.00r.
Siddall, John B.; and Calame, Jean Pierre, to Zoecon Corporation. Cyclopropyl substituted aliphatic amines. 3,711,548, Cl. 260-563.00r.
Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, to Ciba-Geigy AG. Optical brightening agents. 3,711,472, Cl. 260-240.0ca.
Sieloff, Kenneth A. Floral decorative night light. 3,711,696, Cl. 240-10.00p.
Siemens Aktiengesellschaft: *See—*
Heise, Rudolf, 3,711,784.
Jaeger, Hannes; and Veprek, Walter, 3,711,835.
Klar, Erich; Schmid, Peter; and Schabert, Hans-Peter, 3,711,714.
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Paul, Bernt, 3,711,718.
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Siemens-Electrogerate GmbH: *See—*
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Signetics Corporation: *See—*
Brand, Warren L.; and Kashkooli, Faraj Y., 3,711,753.
Silentnight Limited: *See—*
Hebden, Billy, 3,711,051.
Simon, Myron S. N-(ortho-substituted benzene ornapthalene carboxamidoethylene) para-phenylene diamines as coupler-developers. 3,711,546, Cl. 260-559.00s.
Simpson, William E., Jr., to Lockheed Aircraft Corporation. Fluid flow regulator valve. 3,710,820, Cl. 137-495.000.
SINCAT Societa Industriale Catanese S.p.A.: *See—*
Scarfi, Alberto; Gugliotta, Emanuele; and Giudice, Aldo, 3,711,597.
Sinclair-Hoppers Company: *See—*
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Singer Company, The: *See—*
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Lees, Nathaniel P., 3,710,743.
Wojtulewicz, Waclaw, 3,710,629.
Sinnott, David J.; Alecci, Donald E.; and Kaplan, Louis, to Star-New Era, Inc. Photographic composition system. 3,710,698, Cl. 95-4.500.
Sipel, Richard G.: *See—*
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Sirpak, Casey, Incorporated: *See—*
Sirpak, Casey R.; and Pretorius, Yarl, 3,711,152.
Sirpak, Casey R.; and Pretorius, Yarl, to Sirpak, Casey, Incorporated. Health chair. 3,711,152, Cl. 297-282.000.
Sisco, George C.: *See—*
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SKF Kugellagerfabriken GmbH: *See—*
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Skitch, James F., to Walker Crosweller & Company Limited. Fluid flow control valves. 3,710,827, Cl. 137-637.400.

Sklar, Lawrence A. Method of producing polyamide membraces and rigid foamed products. 3,711,583, Cl. 264-49.000.
Sklar, Lawrence A. Systems for production of colored lights from audio impulses and transducer therefor. 3,711,853, Cl. 340-366.00b.
Skutt, Robert R., to National Cash Register Company, The. Interconnected electrode display means. 3,711,733, Cl. 313-109.500.
Slama, Karel: *See—*
Dolejs, Ladislav; Kahovcova, Kitka; Slama, Karel; and Sorm, Frantisek, 3,711,519.
Slavin, Matthew: *See—*
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Sloane, Barbara: *See—*
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Sloane, Nathan H., to Sloane, Barbara. Method of production of urokinase. 3,711,377, Cl. 195-66.00b.
Small, George Milton. Method and apparatus for packing vehicles on movable platforms. 3,710,957, Cl. 214-16.1cc.
Smathers, Harry W.; and Moffa, Joseph, to Armco Steel Corporation. Resilient coupling. 3,711,129, Cl. 285-235.000.
Smatko, Joseph S., to McDonnell Douglas Corporation. Ceramic separator and filter and method of production. 3,711,336, Cl. 136-146.000.
Smed, Preben, to Packaline AG. Plates blank for carrying devices for bottles and a carrying device for bottles. 3,711,143, Cl. 294-87.200.
Smejkal, Hellmuth; and Schwarz, Walter, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Braking means for a flexible connecting element which is resiliently supported at one end and may be stressed in shocks. 3,710,424, Cl. 24-123.0r.
Smilek, Norman N.; and Lockley, Joseph T., to Lockley Manufacturing Co., Inc. Apparatus and method for stacking articles. 3,710,532, Cl. 53-26.000.
Smith, Carl A.: *See—*
Kinsella, Howard R.; Love, John J.; Smith, Carl A.; and Visos, Charles D., 3,711,236.
Smith, Dale R., to York Research & Development Corporation. Indexing cigar pressing machine with automatic input and output. 3,710,802, Cl. 131-81.00r.
Smith, Dean E. Device for controlling the evaporation of volatile substances particularly for use in air conditioning systems. 3,711,023, Cl. 239-54.000.
Smith, Edward J.: *See—*
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Smith, Leland E.; Johnson, Jack B.; Burks, Kenneth N.; and Copeland, Kenneth D., 75% to Kara-Kount Incorporated, mesne. Headline counting and printing design device. 3,711,837, Cl. 340-172.500.
Smith, Robert. Eight cycle twin chambered engine. 3,710,767, Cl. 123-63.000.
Smith, Royal F.: *See—*
Callahan, William H.; and Smith, Royal F., 3,710,991.
Smith, Thomas R., to Maytag Company, The. Token controlled circuit for machine actuation system. 3,710,910, Cl. 194-4.00r.
Smith, Vernon J.; and Heinemeyer, Ben W., to Dow Chemical Company, The. Apparatus and method for stress crack resistance testing. 3,710,616, Cl. 73-88.00r.
Smock, Edmund G. Air-elevated dumping vehicle. 3,711,157, Cl. 298-8.00r.
Snam Progetti, S.p.A.: *See—*
Cucinella, Salvatore; and Mazzei, Alessandro, 3,711,455.
Snitzer, Elias; Robinson, Charles C.; and Woodcock, Richard F., to American Optical Corporation. Neodymium glass laser having room temperature output at wavelengths shorter than 1060 NM. 3,711,787, Cl. 331-94.500.
Snyder, John M.; and O'Neill, James J., to Commercial Affiliates, Inc. Tape seaming method. 3,711,349, Cl. 156-157.000.
Societa Italiana Resine S.p.A.: *See—*
Vargiu, Silvio; Spelta, Osvaldo; Giovanni, Sesto S.; and Abruzzi, Pierluigi, 3,711,431.
Societa Rhodiatoce S.p.A.: *See—*
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Societe Anonyme de Telecommunications: *See—*
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Societe Mafit Manufacture de Fils Isoles Taurus: *See—*
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Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
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Murakami, Tadashi; Hiromoto, Takeshi; Soejima, Zenzo; Hamano, Toyosaburo; Hashimoto, Shinsuke; and Shibamoto, Shingo, 3,710,843.
Soergel, Loren G. Bag holder. 3,711,141, Cl. 294-55.000.
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Shara, Hiroshi; and Yamakawa, Kiyoshi, 3,711,747.
Takano, Masayuki; and Suzuki, Yumihiko, 3,711,640.
Uemura, Saburo, 3,711,724.
Sorenson, Hugh E. Circular watercraft. 3,710,408, Cl. 9-1.000.
Sorenson, Richard W., to Carling Electric, Inc. Center-off floating contact for electric switches. 3,711,663, Cl. 200-67.00g.
Soring, Holgar: *See—*
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Sorm, Frantisek: *See—*
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Sottsass, Ettore, Jr., to Olivetti, Ing. C., & C., S.p.A. Portable typewriter with case. 3,711,175, Cl. 312-208.000.
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Spano, Leo A.; and Lacono, Vincent D., to United States of America, Army. Air distribution garment. 3,710,395, Cl. 2-78.000.
Sparks, Charles H. Graft member grown in a living body. 3,710,400, Cl. 3-1.000.
Sparks, Charles H. Method and apparatus for growing graft tubes in place. 3,710,777, Cl. 128-1.00r.
Spelta, Osvaldo: *See—*
Vargiu, Silvio; Spelta, Osvaldo; Giovanni, Sesto S.; and Abruzzi, Pierluigi, 3,711,431.
Spence, John H.; Yang, Tung Han; and Anderson, Steven A., to Pullman Incorporated. Deflector for railway car cushioning unit. 3,710,952, Cl. 213-43.000.
Spencer, Floyd G.: *See—*
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Spiegel, Norman, to Nasta Industries, Inc. Toy vehicle. 3,710,509, Cl. 45-244.00r.
Spindler, Siegfried W. Sliding clasp fasteners. 3,710,429, Cl. 29-410.000.
Spiteri, Joseph, to Rem Research, Inc. Marker light and lens. 3,711,704, Cl. 240-106.100.
Splatt, Kenneth W.: *See—*
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Spraggins, Thomas C. Fishing reel. 3,711,036, Cl. 242-84.10r.
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Robinson, Charles C.; Graf, Robert E.; Young , Robert W.; and Sproul, Merrill F., 3,711,264.
Square D Company: *See—*
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Squibb, E. R., & Sons, Inc.: *See—*
Narayanan, Venkatachala L., 3,711,538.
Squyres, Henry P., to California Institute of Technology. Uniform variable light source. 3,711,701, Cl. 240-46.135.
Staats, Henry N.; and Levitan, Maurice D., to General Binding Corporation. Laminator. 3,711,355, Cl. 156-499.000.
Stach, Kurt: *See—*
Hubner, Manfred; Heerdt, Ruth; Schmidt, Felix Helmut; Stach, Kurt; and Aumuller, Walter, 3,711,564.
Stachejko, Vitaly, to RCA Corporation. High power microwave switch including a plurality of diodes and conductive rods. 3,711,793, Cl. 333-97.00s.
Stafford, Joseph H.; and Brooks, Robert E., to Ranco Incorporated. Temperature responsive control apparatus for furnaces and the like. 3,711,810, Cl. 337-388.000.
Stahel, Alwin J., to Salm, Arthur, Inc. Foldable pocket kit. 3,710,443, Cl. 30-151.000.
Stahl, Heinz: *See—*
Bandel, Kurt; Bartle, Walter; Gunther, Ewald; Honegg, Adolf; and Stahl, Heinz, 3,711,155.
Stahl, Howard D.: *See—*
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Stahly, Eldon E.; and Lard, Edwin W., to Grace, W. R., & Co. Polyester resin composition with a long shelf life. 3,711,572, Cl. 260-864.000.
Stamicarbon N.V.: *See—*
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Stammreich, John C. Vehicle suspension arrangement. 3,711,113, Cl. 280-96.20r.
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Standard Tool & Manufacturing Co.: *See—*
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Stanford, Joe H. Combination wire stripper and plier device. 3,710,406, Cl. 7-5.100.

Stansell, Alpheus F., to Burroughs Corporation. Self-purging disk system having air flow guide means. 3,710,540, Cl. 55-473.000.

Star-New Era, Inc.: *See—*
Sinnott, David J.; Alecci, Donald E.; and Kaplan, Louis, 3,710,698.

Starkey, Bertrand Julian, to Electric & Musical Industries Limited. Acoustic direction sensing systems. 3,711,820, Cl. 340-2.000.

Starkey, Charles E. Method of verifying signatures and forms carrier for use thereon. 3,711,833, Cl. 340-149.00a.

State of Florida, Department of Citrus: *See—*
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Staub, Fred W., to General Electric Company. Condenser. 3,710,854, Cl. 165-111.000.

Stauffer, Aaron Z.; Herr, John H.; Lepley, James W.; and Zimmerly, James C., to Flying Dutchman, Inc. Bottom discharge means for silo. 3,710,960, Cl. 214-17.0da.

Stauffer Chemical Company: *See—*
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Stauffer-Wacker Silicone Corporation: *See—*
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Stavropoulos, William, S.; and Thiegs, Bernard J., to Dow Chemical Company, The. Glucose determination method employing orthotoluidine. 3,711,250, Cl. 23-230.00b.

Steck, William F., III, to Weaver, W. R., Company. Optical sight aligner. 3,711,204, Cl. 356-153.000.

Steelcraft Corporation: *See—*
Franklin, David M., 3,710,738.

Steele, William E.: *See—*
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Stein, Ira S.: *See—*
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Steinbrenner, Hans; Elorus, Hans-Jorg; and Grossner, Horst, to Daimler-Benz Aktiengesellschaft. Installation for the control of the brakes of a vehicle. 3,711,162, Cl. 303-21.00r.

Steinkamp, John A.: *See—*
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Sterigard Corporation: *See—*
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Steury, Howard C.: *See—*
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Stewart, John Kenneth, to Tamper Inc. Mobile track tamper. 3,710,721, Cl. 104-12.000.

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Story, Eugene. Marine transportation analysis computation. 3,711,862, Cl. 444-1.000.

Story, William K., to Plasteel Industries Incorporated, mesne. Integrated reinforced plastic unit and method and apparatus for making the same. 3,710,733, Cl. 108-51.000.

Stout, Thomas M.; Smith, Edward J.; and Hiestand, John H., to Bunker-Ramo Corporation, The. Computer control of parallel paper mill refiner for controlling the freeness of stock by controlling the stock temperature rise through each refiner. 3,711,687, Cl.235-151.100.

Stout, Thomas M.; Smith, Edward J.; and Hiestand, John H., to Bunker-Ramo Corporation, The. Computer control of paper machine in which basis weight is controlled through control of stock flow. 3,711,688, Cl. 235-151.100.

Stoyanov, Gueorgui Yordanov: *See—*
Stoytenev, Stoyteno Grigorov; Stoilov, Gueorgui Kirilov; Tsanev, Tsani Konstantinov; Gueorguiev, Zdravko Marinov; and Stoyanov, Gueorgui Yordanov, 3,710,967.

Stoytenev, Stoyteno Grigorov; Stoilov, Gueorgui Kirilov; Tsanev, Tsani Konstantinov; Gueorguiev, Zdravko Marinov; and Stoyanov, Gueorgui Yordanov, to DSO Balkancar. Assembly for lateral shifting of the load support of a high lift truck. 3,710,967, Cl. 214-74.000.

Stranger, Donald Arthur; Yates, Frank; and Senior, Jack, to R. W. Transmissions Limited. Worm gears. 3,710,640, Cl. 74-425.000.

Streeters Plant Hire Limited: *See—*
Mazzotti, Peter Charles, 3,711,159.

Strick, Karl H., to Fram Corporation. Fan connecting reinforcing cap to hub. 3,711,219, Cl. 416-132.000.

Strobel, Rudolf G.K.; and Smith, James P., to Procter & Gamble Company, The. Process for the treatment of unchlorinated cake flour. 3,711,297, Cl. 99-93.000.

Stroh, Robert Roy, to Burroughs Corporation. Terminal alignment and connection device for conductors of a multiconductor cable. 3,710,481, Cl. 29-203.00b.

Strom, Ludwig: *See—*
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Strum, Bernard J.; Quincy, Roger B., Jr.; and Butler, Charles T., to United States of America, Atomic Energy Commission. Process for preparing calcined oxides. 3,711,600, Cl. 423-639.000.

Stubbmann, Albert, to Kohner Bros, Inc. Progressive ring-threading puzzle. 3,711,102, Cl. 273-153.00r.

Stuber, Fred A.: *See—*
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Sturlese, Stefano; Guaglia, Giovanni Battista; and Morello, Bartolomeo, to Centro Sperimentale Metallurgico S.p.A. Apparatus for determining traces of elements in massive samples by optical emission spectrometry. 3,711,201, Cl. 356-86.000.

Sugg, Philip Crawford, to Thorn Heating Limited. Heat exchanger apparatus. 3,711,074, Cl. 263-20.000.

Suggitt, Robert M.: *See—*
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Suggitt, Robert M.; Estes, John H.; and Kravitz, Stanley, to Texaco Inc. Fluorided metal alumina catalysts. 3,711,425, Cl. 252-439.000.

SUllivan, Cornelius P.; and Duhl, David N., to United Aircraft Corporation. Columnar-grained nickel-base superalloy casting. 3,711,337, Cl. 148-32.500.

Sullivan, James P. L. Reciprocating piston engine. 3,710,691, Cl. 91-496.000.

Sulzer Brothers Limited: *See—*
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Sumi, Yuichiro: *See—*
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Sumiyoshi, Masaharu; Sakakibara, Shigeru; Ito, Osamu; Wakamatsu, Hisato; and Kato, Takaaki, to Toyota Jidosha Kogyo Kabushiki Kaisha and Nippondenso Kabushiki Kaisha. Automatic transmission system having a shock preventing function in gear shifting. 3,710,30, Cl. 74-75.20a.

Sumiyoshi, Masaharu; Sakakibara, Shigeru; Ito, Osamu; and Wakamatsu, Hisato, to Toyota Jidosha Kogyo Kabushiki Kaisha and Nippondenso Kabushiki Kaisha. Automatic transmission. 3,710,648, Cl. 74-731.000.

Summerville, Robert N., to Lummus Company, The. Heat recovery in urea synthesis. 3,711,544, Cl. 260-555.00a.

Superior Continental Corporation: *See—*
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Sussenbach, Helmut: *See—*
Schiekel, Manfred; Sussenbach, Helmut; and Eichhorst, Ingo, 3,711,383.

Susuki, Rinnosuke; Hoshi, Hiroshi; Saito, Jiro; and Hirakawa, Michio, to Lion Fat & Oil Co., Ltd. Method of manufacturing thermoplastic resin moldings. 3,711,438, Cl. 260-41.00r.

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Suzuki, Matsuo: *See—*
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Suzuki, Yumihiko: *See—*
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Svanstrom, Elis Kjell Ake: *See—*
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Sved, John R., to Pollution Rectifiers Corporation. Gas scrubber. 3,710,551, Cl. 55-226.000.

Svensson, Einar. Air beam way and switching system. 3,710,727, Cl. 104-120.000.

Swehla, Raymond J., to Joslyn Mfg. and Supply Co. Electrical disconnect. 3,711,818, Cl. 339-60.00c.

Sybron Corporation: *See—*
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Sylvester, Edward C.: *See—*
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Sysoev, Petr Ivanovich: *See—*
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Szepesi, Zoltan P. J., to Westinghouse Electric Corporation. Storage amplifier screen. 3,711,719, Cl. 250-213.00r.

Tabler, Donald C.: *See—*
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Tabor, Paul C., to Meter Research Limited. Expandable fastener. 3,710,674, Cl. 85-84.000.

Tadano, Nobuo, to Suzuki Iron Works Company. Automatic fishing machine. 3,710,499, Cl. 43-6.500.

Tag-Along Corporation: *See—*
Puckett, George W., 3,711,112.

Tagnon, Luc Andre. Aberration corrected ophthalmic progressive power lenses. 3,711,191, Cl. 351-169.000.

Takahashi, Masaaki: *See—*
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Takahashi, Toshiro: *See—*
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Takai, Akio: *See—*
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Takano, Masayuki; and Suzuki, Yumihiko, to Sony Corporation. Magnetic tape head tracking indicator. 3,711,640, Cl. 178-6.60a.

Takase, Tadayoshi: *See—*
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Takeda Chemical Industries, Ltd.: *See—*
Asogawa, Tatsuo; Matsumura, Yoshihiko; Satani, Eiji; Wada, Shyozo; and Funakoshi, Yoshiro, 3,711,301.

Takeda, Kin-Ichi. Rotary rearview mirror for vehicles. 3,711,179, Cl. 350-62.000.

Takeda, Sadao; Mitsudome, Kaoru; and Hashimura, Tetsuo, to Tokyo Shibaura Electric Co., Ltd. Doors for electronic ovens. 3,711,673, Cl. 219-10.550.

Takei, Yutaka: *See—*
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Takenaka Komuten Company, Ltd.: *See—*
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Takishima, Yoshiyuki; and Mashimo, Yukio, to Canon Kabushiki Kaisha. Flash device for a camera and a photographing system with an artificial illuminator. 3,710,701, Cl. 95-11.500.

Takita, Hitoshi: *See—*
Asano, Kiro; Takita, Hitoshi; Toyotla, Noriyuki; Takahashi, Masaaki; and Suzuki, Shigeyuki, 3,711,537.

Takizawa, Yoshiyuki: *See—*
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Tamada, Kazumi; and Takase, Tadayoshi, to Rinnai Kabushiki Kaisha. Hot air cooking oven. 3,710,775, Cl. 126-21.00a.

Tamaki, Einosuke; Morishita, Isao; Nishida, Ko; Kato, Kunio; and Matsumoto, Takashi, to Japan Monopoly Corporation, The. Process for preparing licorice extract-like material for tobacco flavouring. 3,710,512, Cl. 47-58.000.

Tamaki, Einosuke; Kobari, Masao; Miyanowaki, Fumihiro; Kato, Kunio; Nishida, Ko; and Shimizu, Yukio, to Japan Monopoly Corporation, The. Process for producing material for smoking. 3,710,805, Cl. 131-140.00c.

Tamar Electronics, Inc.: *See—*
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Tamaru, Hiroshi; and Inoue, Hiroyuki, to Tsubakimoto Chain, Ltd. Tension device for chain drive. 3,710,634, Cl. 74-242.11s.

Tamper Inc.: *See—*
Stewart, John Kenneth, 3,710,721.

Tamplen, Jack W. Percussion firing system. 3,710,717, Cl. 102-20.000.

Tanaka, Haruo: *See—*
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Tanaka, Katsunobu; Kimura, Kazuo; and Yamamoto, Masaki, to Kyowa Hakko Kogyo Co., Ltd. Process for producing L-glutamic acid. 3,711,373, Cl. 195-28.00r.

Tanaka, Katsunobu; and Kimura, Kazuo, to Kyowa Hakko Kogyo Co., Ltd. Process for producing L-lysine by fermentation in the presence of hydrocarbons. 3,711,374, Cl. 195-28.00r.

Tangen Drivers, Inc.: *See—*
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Tantillo, Sylvia. Holder for articles. 3,711,021, Cl. 248-330.000.

Tardoskegyi, Louis V.; and Elliott, Donald A., to Electrovert Manufacturing Co. Ltd. Wiper means for liquid flux applying apparatus. 3,710,759, Cl. 118-123.000.

Tasca, Dante M.; Harnden, John D., Jr.; and Martzloff, Francois D., to General Electric Company. Surge suppression transmission means. 3,711,794, Cl. 333-96.000.

Tatum, Howard J.; Jernberg, Nils A.; and Braun, John, to Population Council Inc., The. Filament winding apparatus. 3,711,035, Cl. 242-7.010.

Taylor, Clarence R. Massaging device. 3,710,784, Cl. 128-24.200.

Taylor, George J.: *See—*
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Taylor, John D. Earth anchor. 3,710,523, Cl. 52-157.000.

Techlite, Inc.: *See—*
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Teichmann, Friedrich; and Hengelhaupt, Hans-George, to Triumph Werke Nuernberg A.G. Ribbon supply supporting structure in typewriters and similar machines. 3,710,915, Cl. 197-151.000.

Teitelbaum, Bernard R.: *See—*
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Telafix Incorporated: *See—*
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Teleflex, Inc.: *See—*
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Telefonaktiebolaget L M Ericsson: *See—*
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Tellerman, Edward M., to Stop-Motion Devices Corporation. Control means for textile producing machines. 3,710,595, Cl. 66-157.000.

Temo Incorporated: *See—*
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Temple, Robert D.: *See—*
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Tenney, Horace M.: *See—*
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Teplitz, Alfred, to United States Steel Corporation. Coke oven door structure. 3,711,380, Cl. 202-248.000.

Teves-Thompson GmbH: *See—*
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Tewey, Robert T.: *See—*
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Dancy, Julian H.; Wiley, William O.; and Tyson, Thomas L., 3,711,238.
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Estes, John Harold; Kravitz, Stanley; and Suggitt, Robert M., 3,711,399.
Lachowicz, Donald R.; Saines, George S.; and Eckert, George W., 3,711,255.
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Farah, Basil S., 3,711,571.
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Thalenfeld, David R. Display holder for artificial flowers and the like. 3,711,048, Cl. 248-309.000.

Thalmann, Armin: *See—*
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Thermotics, Inc.: *See—*
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Thiegs, Bernard J.: *See—*
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Thoma, Wilhelm; Oertel, Harald; and Rinke, Heinrich, to Farbenfabriken Bayer Aktiengesellschaft. Linear segmented polyurethane elastomers. 3,711,443, Cl. 260-75.0nh.

Thomann, Helmut, to Siemens Aktiengesellschaft. Method for the subsequent adjusting of the transit time of a piezo electric ceramic substrate for an electro-acoustical delay line. 3,710,465, Cl. 29-25.350.

Thomas & Betts, Corporation, mesne: *See—*
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Thompson, Richard F., to Husted, Royce Hill and Shiber, Samuel. Power ski. 3,710,881, Cl. 180-5.00r.

Thorn Electrical Industries Limited: *See—*
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Thorn Heating Limited: *See—*
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Thornell, Ernest L., to Marlin Toy Products, Inc. Animated toy. 3,710,506, Cl. 46-118.000.

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Tindy, Roger: *See—*
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Tink, Robert M., to National Cash Register, The. Latching and control circuit for carrier detection. 3,711,777, Cl. 325-320.000.
Tinnerman, George A. Lath to stud clip. 3,711,137, Cl. 287-189.350.
Tirrell, Frank B., to Emhart Corporation. Travel guide for bolt action rifles. 3,710,492, Cl. 42-16.000.
to said Huffman and Baker: *See—*
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Todd, William B. Projectile and target apparatus including scoring pieces adapted for attachment to the projectile. 3,711,095, Cl. 273-95.00r.
Tokico Ltd.: *See—*
Yamawaki, Shunro; and Ohyama, Isao, 3,711,832.
Tokyo Institute of Technology: *See—*
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Tokyo Shibaura Electric Co., Ltd.: *See—*
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Tomcufcik, Andrew Stephen; and Wilkinson, Raymond George, to American Cyanamid Company. Compositions containing 3-nitroimidazo(1,2-b) pyridazines and method of use for treating amoebae and trichomonae. 3,711,613, Cl. 424-250.000.
Tomic, Ernst A., to Du Pont de Nemours, E. I., and Company. Chemical foaming of water-bearing explosives. 3,711,345, Cl. 149-22.000.
Tomlinson, Barbara L. Dispensable head covering. 3,710,396, Cl. 2-197.000.
Tontini, Remo; Millman, Victor; and MacDonald, Howard R., to Rohr Corporation. Thrust control and sound apparatus. 3,711,013, Cl. 239-265.170.
Tooka, Takuzo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Pneumatic device for automatic control system of sliver's thickness. 3,710,421, Cl. 19-240.000.
Torba, Florence E., to Dow Chemical Company, The. Substituted (trifluoromethyl) pyridines. 3,711,486, Cl. 260-294.80g.
Torrance, Gordon A.: *See—*
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Torsch, Charles Edward, to GTE Sylvania Incorporated. Toroid yoke with multi-part core. 3,711,802, Cl. 335-210.000.
Toss, Franco, to Hamac-Hansella GmbH. Arrangement for depositing objects in a receptacle. 3,710,543, Cl. 53-244.000.
Toyo Kogyo Co., Ltd.: *See—*
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Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
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Sumiyoshi, Masaharu; Sakakibara, Shigeru; Ito, Osamu; and Wakamatsu, Hisato, 3,710,648.
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Tracey, Peter M. Fluid actuators. 3,710,571, Cl. 60-54.50r.
Trahan, Albert J. Gyroscopic-action dynamic balancer. 3,710,627, Cl. 73-464.000.
Trane Company, The: *See—*
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Trechock, Jack; and Saller, Erik, to Joseph, Robert T. and FMC Corporation. Method of controlling ultrafines from reactive form coke. 3,711,318, Cl. 117-100.00a.
Treible, Edwin S., Jr.: *See—*
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Trevisani, Silvano: *See—*
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Trice, Gladys. Method of making a reversible garment. 3,710,394, Cl. 2-74.000.
Tridair Industries: *See—*
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Trikilis, Emmanuel M. Keyless rod locking device. 3,710,605, Cl. 70-196.000.
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Truline Casting Company: *See—*
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TRW Inc.: *See—*
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Tsanev, Tsani Konstantinov: *See—*
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Tsujimoto, Toshio, to Fukusuke Kabushiki Kaisha Sakaishi. Man's brief. 3,710,397, Cl. 2-224.00a.
Tucker, John R.; and Williams, Raymond R., to Lockheed Aircraft Corporation. Apparatus for producing optical patterns. 3,710,696, Cl. 95-1.100.
Tucker, Joseph A. Personal portfolio computer. 3,711,014, Cl. 235-70.00r.
Tucker, Thomas M., to McCord Corporation. Linear actuator assembly. 3,710,632, Cl. 74-89.150.
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Tulk, Alexander Stuart; Douglas, Alan David; and Ericson, Ivan L., to GTE Sylvania Incorporated. Inspection method and apparatus for detecting oversized apertures in relatively thin sheets of opaque material. 3,711,205, Cl. 356-162.000.
Tully, Paul R.; and Lippe, Robert J., to Cabot Corporation. Plant growth media and methods. 3,710,510, Cl. 47-58.000.
Tunge, Heinert. Apparatus for superfinishing of rotary crankpins of crankshifts. 3,710,514, Cl. 51-3.000.
Turetsky, Lazar Isaakovich; Gryzlov, Anatoly Grigorievich; Proskurovsky, Filipp Yakovlevich; Lomachenko, Gennady Nikolaevich; and Ageev, Nikolai Ivanovich, to Vsesojuzny Teplotekhnichesky Nauchno-Issledovatelsky Institut Imeni F.E. Dzerzhinskogo. Non-retur valve. 3,710,821, Cl. 137-527.800.
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Uelzmann, Heinz; and Hidinger, David C., Jr., to General Tire & Rubber Company, The. Aziridinyl silanes. 3,711,466, Cl. 260-239.00e.
Uemura, Saburo, to Sony Corporation. Speed detecting device. 3,711,724, Cl. 307-43.000.
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Vaitys, Ramojus P., to General American Transportation Corporation. System for storing and transporting ladings. 3,710,966, Cl. 214-515.000.
Valentine, Harry M., to Bendix-Westinghouse Automotive Air Brake Company. Breathing system for spring brake actuator. 3,710,692, Cl. 92-63.000.
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Van Otteren, Wilbur M., to Automatic Tube Co. Pneumatic tube system. 3,711,038, Cl. 243-2.000.
Van Paesschen, August Jean; Van Gossum, Lucien Janbaptist; and Priem, Jan Jozef, to Agfa-Gevaert. Photographic film with subbing layers. 3,711,284, Cl. 96-87.00r.
Van Sice, David P.; and Martin, Paul A., to Quaker Oats Company, The. Music box record player. 3,710,668, Cl. 84-98.000.
Van Tassel, James H.: *See—*
Kilby, Jack S.; and Van Tassel, James H., 3,711,626.
Van Uitert, Le Grand Gerard: *See—*
Geusic, Joseph Edward; and Van Uitert, Le Grand Gerard, 3,711,841.
Van Veldhuizen, John. Air cushion vehicle with supplemental support wheels including centrifugal fan means. 3,710,887, Cl. 180-119.000.
Van Zijp, Tonny, to N.V. Leidsche Apparatenfabriek. Gripping device for bottles. 3,710,928, Cl. 198-210.000.
Van Zon, Cornelis, to Industriele Onderneming Wavin N.V. Device for manufacturing a plastic tube. 3,711,232, Cl. 425-150.000.
Vargiu, Silvio; Spelta, Osvaldo; Giovanni, Sesto S.; and Abruzzi, Pierluigi, to Societa Italiana Resine S.p.A. Method of manufacturing lightweight building components. 3,711,431, Cl. 260-2.50b.
Varian Associates: *See—*
Ernst, Richard R., 3,711,764.
Vautier, Philippe Jean; and Coester, Jean Yves, to Societe Anonyme de Telecommunications. Determination of the frequency of laser radiation. 3,711,786, Cl. 331-94.500.
VEB Polygraph Leipzig Kombinat f. Polygraphiche Maschinen und Ausrustungen: *See—*
Graupner, Eberhard, 3,710,714.
Vector General, Inc.: *See—*
Hasenbalg, Ralph D., 3,711,849.
Veeder Industries, Inc.: *See—*
Voegelin, Howard H., 3,710,713.
Veprek, Walter: *See—*
Jaeger, Hannes; and Veprek, Walter, 3,711,835.
Ver Steeg, David J., to Marathon Oil Company. Miscible-type flooding of oil reservoirs having water saturated bottom zones. 3,710,861, Cl. 166-269.000.
Vereinigte Flugtechinische Werke-Fokker GmbH: *See—*
Seidenfaden, Heinz, 3,711,082.
Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft: *See—*
Schoffmann, Rudolf, 3,710,436.
Schoffmann, Rudolf, 3,710,847.
Smejkal, Hellmuth; and Schwarz, Walter, 3,710,424.
Vermilion, Everette F.; Seeley, Eugene B.; and Lefcort, Malcolm D., to Sector Corporation. System and method for printing alpha-numerics and graphics. 3,711,646, Cl. 178-25.000.
Verstegen, Johannes D.M.; and Van Nassau, Petrus J.M., to Stamicarbon N.V. Process for separating melamine from a hot synthesis gas mixture which contains melamine vapor. 3,711,479, Cl. 260-249.70p.
Vesamaa, Erkki, to Valmet Oy. Indicator of cocked position in a firearm to be opened by breaking. 3,710,491, Cl. 42-1.00c.
Vetco Offshore Industries, Inc.: *See—*
Hanes, James W. E.; Larralde, Edward; and Rimmer, Michael J., 3,710,859.
Vickers Limited: *See—*
O'Connor, Anthony, 3,711,186.
Vickland, Jack M.: *See—*
Schultz, Roger T.; Vickland, Jack M.; and Sickler, Raymond E., 3,711,055.
Vida, Julius A.; and Wilber, William R., to Kendall Company, The. N,N-dihalomethyl phenobarbital for the treatment of convulsions. 3,711,607, Cl. 424-254.000.
Vik, Albam M., to Dempco, Inc. Hydraulic coupler with cam actuator. 3,710,823, Cl. 137-594.000.
Villella, Felminio; and Hamiter, Leon C. Solid state double-pole double-throw relay. 3,711,728, Cl. 307-254.000.
Vilter Manufacturing Corporation: *See—*
Kocher, Erich J., 3,710,590.
Visidyne Inc.: *See—*
Zehnpfennig, Theodore F., 3,711,188.

Visos, Charles D.: *See—*
Kinsella, Howard R.; Love, John J.; Smith, Carl A.; and Visos, Charles D., 3,711,236.

Vitelli, Vito J., to Morgan Construction Company. Method for cooling and spheroidizing steel rod. 3,711,338, Cl. 148-12.000.

Vock, Manfred H.: *See—*
Mookherjee, Braja D.; Giacini, Christopher; Karoll, Elizabeth A.; and Vock, Manfred H., 3,711,482.

Voegelin, Howard H., to Veeder Industries, Inc. Print hammer actuating mechanism. 3,710,713, Cl. 101-93.00c.

Vogel, Calvin: *See—*
Field, Nathan D.; Randall, David I.; and Vogel, Calvin, 3,711,541.

Vogel, Paul W.: *See—*
Vogel, Virgil W.; and Vogel, Paul W., 3,711,298.

Vogel, Virgil J.: *See—*
Vogel, Virgil W.; and Vogel, Paul W., 3,711,298.

Vogel, Virgil W.; deceased (by Vogel, Virgil J.; co-executor); and Vogel, Paul W., to Bird Provision Co. Process for preparing packaged meat products for prolonged storage. 3,711,298, Cl. 99-108.000.

Voigt, Hartmut: *See—*
Gunther, Klaus; Schneck, Erich; Voigt, Hartmut; and Wesselborg, Karlheinrich, 3,710,545.

Voith, J. M., GmbH: *See—*
Baer, Wolfgang; and Fork, Werner, 3,710,748.

Von Bogdandy, Ludwig; Richter, Helmut; and Forster, Eckerhard, to Huttenwerk Oberhausen A.G. Method of alloying together with semikilling steel. 3,711,277, Cl. 75-129.000.

Von Keszycki, Harald J. Valve for anti-skid brake control mechanism 3,710,899, Cl. 188-181.00a.

Von Mikusch-Buchberg, Johannes Donatus, to Lever Brothers Company. Drying oils. 3,711,307, Cl. 106-243.000.

Von Ohain, Hans J. P.; and Keller, Melvin R., to United States of America, Air Force. Colloidal-gas core reactor. 3,711,370, Cl. 176-45.000.

Voplex Corporation: *See—*
Bennington, C. Earl, 3,711,680.

Vossos, Peter H.: *See—*
Payne, Charles C.; and Vossos, Peter H., 3,711,416.

Vsesojuzny Teplotekhnichesky Nauchno-Issledovatelsky Institut Imeni F.E. Dzerzhinskogo: *See—*
Turetsky, Lazar Isaakovich; Gryzlov, Anatoly Grigorievich; Proskurovsky, Filipp Yakovlevich; Lomachenko, Gennady Nikolaevich; and Ageev, Nikolai Ivanovich, 3,710,821.

Wack, John M.: *See—*
Demas, Nicholas L.; Fabian, George J.; Marderian, Alex S.; Minn, Sherman L.; Wack, John M.; Waxman, Herbert I.; and Wecker, Edwin W., 3,710,722.

Wacker-Chemitronic Gesellschaft fur Elektronik Grundstoffe m.b.H.: *See—*
Bienert, Klaus; Lang, Winfried; and Weidner, Herbert, 3,711,594.

Wada, Mitsuo; Mikoda, Masanari; Aoki, Masaki; and Hikino, Tadashi, to Matsushita Electric Industrial Co., Ltd. Resistor paste. 3,711,328, Cl. 252-518.000.

Wada, Shyozo: *See—*
Asogawa, Tatsuo; Matsumura, Yoshihiko; Satani, Eiji; Wada, Shyozo; and Funakoshi, Yoshiro, 3,711,301.

Wagers, William O.; Frappier, Robert H.; McDonald, William S.; and Boggs, Charles L., to International Paper Company. Flute sealing method. 3,711,352, Cl. 156-202.000.

Wagner, Andrew F. Mechanism for converting wheeled vehicle into tracked vehicle. 3,710,886, Cl. 180-9.20r.

Wagner, David Prugh; and Russell, John James. Method of sealing and locking a fastener. 3,711,347, Cl. 156-91.000.

Wagner Electric Corporation: *See—*
Machek, John A., 3,710,896.

Wagner, Karl, to Agfa-Gevaert Aktiengesellschaft. Illuminating arrangement with flash lamps for use with photographic apparatus. 3,710,704, Cl. 95-11.00l.

Wagner, Klaus; and Roos, Ernst, to Farbenfabriken Bayer Aktiengesellschaft. Substituted 3-aminoindazoles. 3,711,506, Cl. 260-310.00c.

Wakamatsu, Hisato: *See—*
Sumiyoshi, Masaharu; Sakakibara, Shigeru; Ito, Osamu; Wakamatsu, Hisato; and Kato, Takaaki, 3,710,630.
Sumiyoshi, Masaharu; Sakakibara, Shigeru; Ito, Osamu; and Wakamatsu, Hisato, 3,710,648.

Waldenville, David B. Apparatus for oxygenation of liquids. 3,711,072, Cl. 261-122.000.

Walker Crosweller & Company Limited: *See—*
Skitch, James F., 3,710,827.

Walker, Elmo R.: *See—*
Dillenbeck, Warren H.; Muench, Paul W.; and Walker, Elmo R., 3,710,585.

Walker, Wellington E.: *See—*
Manyik, Robert M.; and Walker, Wellington E., 3,711,534.

Wallenstein, Spangenberg, Hattis & Strampel: *See—*
Witte, Bruce J., 3,711,022.

Walter, Richard T., to Container Corporation of America. Apparatus and method for forming article carriers. 3,710,535, Cl. 53-3.000.

Wander, A., Dr., Ltd., a/k/a Wander, A., Dr., AG: *See—*
Bream, John B.; Picard, Claude Wolfgang; and Read, David Michael, 3,711,505.

Ward, Donald H., to Borg-Warner Corporation. Apparatus and method for cutting record discs. 3,711,658, Cl. 179-100.40c.

Ward, John H., to Optronics International, Inc. Apparatus for making and reconstructing reference beam coded holograms. 3,711,177, Cl. 250-220.000.

Ware, Richard S., Jr. Releasable trolling weight. 3,710,501, Cl. 43-43.110.

Warner, Richard C., to Eldapat General, Inc. Anti-fouling spark ignition devices. 3,710,772, Cl. 123-169.00r.

Warshaw, Irvin J. Gas-fueled lighter. 3,711,240, Cl. 431-253.000.

Wartman, Albert: *See—*
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Warwick Electronics, Inc.: *See—*
Portoulas, Panayiotis G., 3,711,634.
Royse, James F.; and Lee, Bert J., 3,710,480.

Watanabe, Richard M.: *See—*
Fiedler, Vivian G., 3,711,090.

Watanabe, Tadashi; Murata, Koichiro; Iwasawa, Naozumi; and Okinaga, Tsuyoshi, to Kansai Paint Company Limited. Liquid coating composition comprising amino resin and vinyl-modified alkyld resin. 3,711,434, Cl. 260-21.000.

Watkins, Edwin P.: *See—*
Keyes, Karl A.; Doing, Park A.; and Watkins, Edwin P., 3,710,666.

Watson, Guido, to Westinghouse Electric Corporation. Off delay timer and internally generated auxiliary direct current voltage source for a controlled rectifier alternating current switch for use therein. 3,711,761, Cl. 322-18.000.

Watts, Edwin B., to Sealy, Incorporated. Bed carrying frame. 3,710,405, Cl. 5-201.000.

Waukesha Bearings Corporation: *See—*
Gardner, Willis W., 3,711,169.

Waxman, Herbert I.: *See—*
Demas, Nicholas L.; Fabian, George J.; Marderian, Alex S.; Minn, Sherman L.; Wack, John M.; Waxman, Herbert I.; and Wecker, Edwin W., 3,710,722.

Wayman, Robert W.; and Wiemer, Howard C., to Borg-Warner Corporation. Hydraulic transmission. 3,710,602, Cl. 68-23.700.

Wayson, Andrew J., to Merriman, Inc. Means for controlling the coefficient of friction between bearing surfaces. 3,711,166, Cl. 308-300.000.

Weaver, W. R., Company: *See—*
Steck, William F., III, 3,711,204.

Webb, Jervis B., Company: *See—*
Boehm, Walter G.; and Torrance, Gordon A., 3,710,711.

Weber, Karl Heinz: *See—*
Bauer, Adolf; Weber, Karl Heinz; Danneberg, Peter; and Minck, Klaus, 3,711,468.

Weber, Karl Heinz; Bauer, Adolf; Danneberg, Peter; and Minck, Klaus, to Boehringer Ingelheim G.m.b.H. 2-(Alkoxy or alkylmercapto)-5-phenyl-4H-3, 5-dihydro-1,5-benzodiazepin-4-ones. 3,711,467, Cl. 260-239.30b.

Weber, Karl-Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz; deceased (by Hauptman, Maria; heir), to Boehringer Ingelheim G.m.b.H. 5-Phenyl-7-bromo-1H-1,5-benzodiazepine-2, 4-(3H, 5H)-diones. 3,711,470, Cl. 260-239.30b.

Weber, Kurt: *See—*
Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,711,472.

Weber, Rolf: *See—*
Piech, Ferdinand K.; and Weber, Rolf, 3,710,773.

Weber-Knapp Company: *See—*
Phelps, Malcolm T., 3,710,416.

Webster, Milo E., to Gillette Company, The. Dispensing package of the pressurized type. 3,710,984, Cl. 222-145.000.

Webster, WIlliam W.; and Messenger, Joseph U., to Mobil Oil Corporation. Treatment of formations containing fresh-water swelling clays. 3,710,863, Cl. 166-272.000.

Wecker, Edwin W.: *See—*
Demas, Nicholas L.; Fabian, George J.; Marderian, Alex S.; Minn, Sherman L.; Wack, John M.; Waxman, Herbert I.; and Wecker, Edwin W., 3,710,722.

Wedco, Inc.: *See—*
Feder, Friedhelm R., 3,710,558.

Wedge-Lock Honing Stone Co.: *See—*
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Wehrli, Ueli: *See—*
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Weidner, Herbert: *See—*
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Weidner, Urban A.; and Charlich, Nicholas, to Mak-Kraft Creations, Inc. Seating unit in an article of furniture. 3,710,403, Cl. 5-18.000.

Weinhold, Heinz: *See—*
Mennekes, Werner; and Weinhold, Heinz, 3,711,160.

Weinstein, Richard, to International Telephone and Telegraph Corporation. Zone control valve assembly. 3,711,060, Cl. 251-11.000.

Weist, Herman C. Method and apparatus for folding lengths of material. 3,711,086, Cl. 270-83.000.

Weller, Carroll E.: *See—*
Perrero, George; and Weller, Carroll E., 3,711,782.

Weller, Kurt: *See—*
Fromme, Hans-Georg; Nadler, Franz; Zimmer, Siegfried; and Weller, Kurt, 3,710,923.

Welsh, Aaron L. Self-powered water vehicle with rearwardly displaced operator's sled. 3,710,750, Cl. 115-70.000.

Weman, Klas Bertil, to Elektriska Svetsningsaktiebologet. Apparatus for inductor current centrol in electric arc welding. 3,711,058, Cl. 219-131.0wr.

Wendel, Gunther; and Fingerle, Rudolf, to SKF Kugellagerfabriken GmbH. Apparatus for mounting a spinning turbine. 3,711,168, Cl. 308-26.000.

Wendel, John S.: *See—*
Wendel, John S.; Kaiser, Lavern L.; and Grile, Dwight, 3,710,762.

Wendel, John S.; Kaiser, Lavern L.; and Grile, Dwight, to Wendel, John S. and said Grile assor. to said Kaiser, Lavern L. Method and apparatus for pneumatic conveying articles. 3,710,762, Cl. 119-82.000.

Werbell, Mitchell L., III, to Quantum Corporation, The. Silencer for mounting on firearm barrel. 3,710,679, Cl. 89-14.00d.

Werkzeugmaschinenfabrik Oerlikon-Buhrle A.G.: *See—*
Mayer, Cornelius, 3,710,677.
Muller, Kurt; and Trevisani, Silvano, 3,710,723.

Werner, Otto V. Expandable and contractible tubing support structure. 3,711,133, Cl. 287-54.00a.

Werner, Robert M.: *See—*
Valerio, Paul F.; and Werner, Robert M., 3,710,517.

Werner, Walter Myers, to AMP Incorporated. Detonator for an explosively operated connector. 3,710,719, Cl. 102-28.00r.

Weseloh, Roger J.; and Whaley, Warren R., to Allis-Chalmers Manufacturing Company. Lube oil pump drive for balancer. 3,710,774, Cl. 123-192.00b.

Wesselborg, Karlheinrich: *See—*
Gunther, Klaus; Schneck, Erich; Voigt, Hartmut; and Wesselborg, Karlheinrich, 3,710,545.

Wessendorf, Richard, to Henkel & Cie G.m.b.H. Preparation of bromonitro alcohols. 3,711,561, Cl. 260-633.000.

West, Roger F., to United Aircraft Corporation. High speed magnetic focus device. 3,711,803, Cl. 335-210.000.

Western Electric Company, Incorporated: *See—*
Bielawski, Joseph J., 3,710,531.

Westhershields Limited: *See—*
Perks, Joseph, 3,711,150.

Westinghouse Electric Corporation: *See—*
Hoffman, Kenneth C., 3,711,052.
Kaiser, Francis D., 3,711,760.
Kipple, Harry P.; Price, Charles E.; and Leader, Adam M., 3,710,437.
Kuhn, Edmund W., 3,711,662.
Long, Arthur H.; and Seidel, Joseph, 3,710,430.
Moreland, William C., II; Cobb, William R.; and Tyke, Charles R., 3,711,672.
Reeder, George C., Jr., 3,711,858.
Szepesi, Zoltan P. J., 3,711,719.
Watson, Guido, 3,711,761.
Williamson, Hugh C., 3,710,819.

Westlund, Arnold E., Jr.; and Audesse, Emery G., to GTE Sylvania Incorporated. Disclosing light. 3,711,700, Cl. 240-41.150.

Weston, David. Flotation of lateritic nickel ores. 3,711,032, Cl. 241-20.000.

Weston Instruments: *See—*
Kelly, Austin T., 3,711,850.

Wey, Josef. Mouthpiece for cigarettes and other tobacco products. 3,710,804, Cl. 131-171.00a.

Whale Enterprises, Inc.: *See—*
Hogue, Charles J., 3,711,092.

Whaley, Warren R.: *See—*
Weseloh, Roger J.; and Whaley, Warren R., 3,710,774.

Whelpley, Donald E., to Burroughs, V. P., and Sons, Inc. Flake and pellet cooler. 3,710,453, Cl. 34-164.000.

Whirlpool Corporation: *See—*
Frick, Harold L., 3,710,776.
Wiechert, Jay A., 3,711,726.

White Motor Corporation: *See—*
Madzsar, George C.; and Kozma, Otto, 3,711,146.
Muir, Earl B., 3,710,908.

Whitehorn, Richard M. Harmonic differential sprocket. 3,710,635, Cl. 74-243.00r.

Whitfield, Alan A.: *See—*
Orkin, Stanley S.; and Whitfield, Alan A., 3,711,171.

Whitney, Wiley. Communication system providing combined audio-video service. 3,711,648, Cl. 179-2.0tv.

Widdig, Arno; Sasse, Klaus; Grewe, Ferdinand; Scheinpflug, Hans; Frohberger, Paul-Ernst; and Kaspers, Helmut, to Farbenfabriken Bayer Aktiengesellschaft. Substituted carbonyl-carbamidyl-benzimidazole-2-yl-carbamic acid esters. 3,711,503, Cl. 260-309.200.

Wiechert, Jay A., to Whirlpool Corporation. Bimetallic signal device for appliances. 3,711,726, Cl. 307-117.000.

Wieland, Alfred; and Schroeder, Georg, to Chemische Werke Huls Aktiengesellschaft. Process for the production of aqueous dispersions having a high surface tension of carboxyl-group-containing synthetic rubber. 3,711,437, Cl. 260-29.70w.

Wiemer, Howard C.: *See—*
Wayman, Robert W.; and Wiemer, Howard C., 3,710,602.

Wiesner-Hager KG: *See—*
Kratzer, Walter, 3,710,418.

Wilber, William R.: *See—*
Vida, Julius A.; and Wilber, William R., 3,711,607.

Wilcom Products, Inc.: *See—*
Campbell, Richard H., Jr.; and Wilkens, William B., 3,711,767.

Wiley, William O.: *See—*
Dancy, Julian H.; Wiley, William O.; and Tyson, Thomas L., 3,711,238.

Wilkens, Christian. Method of knitting a pile fabric on a warp knitting machine. 3,710,598, Cl. 66-192.000.

Wilkens, William B.: *See—*
Campbell, Richard H., Jr.; and Wilkens, William B., 3,711,767.

Wilkinson, Raymond George: *See—*
Tomcufcik, Andrew Stephen; and Wilkinson, Raymond George, 3,711,613.

Willchemco, Inc.: *See—*
Curless, William T., 3,711,269.

Willey, Monroe M., to Du Pont de Nemours, E. I., and Company. Coating composition of an acrylic oxazoline containing polymer and cellulose acetate butyrate. 3,711,433, Cl. 260-17.00r.

Williams, Raymond R.: *See—*
Tucker, John R.; and Williams, Raymond R., 3,710,696.

Williams, Will B., 1/2 to Benson, Harry J., mesne. Gas conditioning apparatus with baffles and dryer unit. 3,711,256, Cl. 48-180.00r.

Williams, Wilmore: *See—*
Luksas, Anthony J.; and Williams, Wilmore, 3,711,303.

Williamson, David T. N.; Hutchison, James Moffat; and Wilson, Kenneth C., said Hutchison, said Williams and said Wilson assors. to Molins Machine Company Limited. Machine tools and more particularly to data-controlled machine tools. 3,710,466, Cl. 29-27.00.

Williamson, Hugh C., to Westinghouse Electric Corporation. Hose and hose storage arrangement for a portable dishwasher. 3,710,819, Cl. 137-355.170.

Willis, David M.; Young, William O., Jr.; and Quattlebaum, Walter J., to Butte Knitting Mills. Method of preparing packages of yarn for subsequent treatment. 3,710,431, Cl. 29-428.000.

Wilseck, James: *See—*
Dewar, Donald M.; and Wilseck, James, 3,710,879.

Wilson, Harry C. Hinge. 3,710,415, Cl. 16-128.000.

Wilson, Harry Howard, Jr. Overhead projection apparatus. 3,711,194, Cl. 353-99.000.

Wilson, Homer M., to Petrolite Corporation. Resistance-capacitance meter. 3,711,770, Cl. 324-57.00r.

Wilson, Kenneth C.: *See—*
Williamson, David T. N.; Hutchison, James Moffat; and Wilson, Kenneth C., 3,710,466.

Wilson, Neill R. Self-adjusting wrench. 3,710,658, Cl. 81-367.000.

Winder, Jesse W. Motorcycle trail hitch. 3,711,120, Cl. 280-292.000.

Wingard Limited: *See—*
Cunningham, Douglas James, 3,711,153.

Wink, Randall W.: *See—*
Crowley, Norman R.; Fuchs, Gilbert N.; and Wink, Randall W., 3,710,958.

Winkler & Dunnebier Maschinenfabrik und Eisengiesserei: *See—*
Ehlscheid, Gunter, 3,710,694.

Winkler, Tommy H. Drum anchor. 3,710,670, Cl. 84-421.000.

Winnick, Charles N.: *See—*
Hewlett, Colin; and Winnick, Charles N., 3,711,532.

Wise, Donald S., to Telafix Incorporated. Method of and means for repairing lateral branches of sub-surface pipe lines. 3,710,812, Cl. 137-15.000.

Wiswall, Richard H., Jr.: *See—*
Reilly, James J., Jr.; and Wiswall, Richard H., Jr., 3,711,601.

Witte, Bruce J., 25% to Glick, Leo L. and 25% to Wallenstein, Spangenberg, Hattis & Strampel. Electrostatic coating apparatus. 3,711,022, Cl. 239-15.000.

Witzel, John, III, to Hercules Incorporated. Process for the fabrication of complex contoured bodies. 3,711,350, Cl. 156-169.000.

Witzel, John R., to Cincinnati Milacron Inc. Dielectric-flow-directing EDM electrode. 3,711,676, Cl. 219-69.00d.

Wojtulewicz, Waclaw, to Singer Company, The. Three-axis accelerometer. 3,710,629, Cl. 73-510.000.

Wolf, Milton: *See—*
Diebold, James L.; and Wolf, Milton, 3,711,476.

Wolski, Karlheinz, to Demag Aktiengesellschaft. Suction operated lifting device. 3,711,142, Cl. 294-64.00r.

Woma-Apparatebau Wolfgang Maasberg & Co. GmbH: *See—*
Heinrich, Willy; and Strom, Ludwig, 3,711,026.

Wommack, Joel B., Jr.: *See—*
Adams, Charles D.; and Wommack, Joel B., Jr., 3,711,504.

Wong, Lip F., to Reynolds Metals Company. Tubular construction. 3,710,581, Cl. 61-45.00r.

Wong, Morton M.: *See—*
Gomes, John M.; Pool, Danny L.; and Wong, Morton M., 3,711,386.

Woodcock, Richard F.: *See—*
Snitzer, Elias; Robinson, Charles C.; and Woodcock, Richard F., 3,711,787.

Woodling, George V. Fluid valve means having feathering action. 3,710,826, Cl. 137-625.210.

Woodman Company, Inc., The: *See—*
Henry, Nelson R., 3,710,980.

Woodson, Carl W.: *See—*
Shinn, Jeffrey N.; and Woodson, Carl W., 3,710,814.

Woodward, Robert Burns: *See—*
Heusler, Karl; and Woodward, Robert Burns, 3,711,464.

Worden, Robert F., to General Electric Company. Means and method for modifying the flesh-tone response of a color television receiver. 3,711,635, Cl. 178-5.4he.

Wright, Edward S.: *See—*
Daniels, Neville H. G.; and Wright, Edward S., 3,710,434.

Wright, John J.: *See—*
Aycock, Thomas W.; and Wright, John J., 3,711,428.

Wright, John R.: *See—*
Klinger, Theodore J.; and Wright, John R., 3,711,180.
Wright, Robert J., to Research Laboratories of Australia Pty. Limited. Method of and means for controlling corona emission. 3,711,710, Cl. 250-49.5gc.
Wright, William E.: *See—*
Pottorff, Donald R.; and Wright, William E., 3,710,950.
Wurtz, William O.: *See—*
Lowy, Lawrence; and Wurtz, William O., 3,710,538.
Wyman, Russell A., to Canadian Patents and Development Limited. Concentration of spodumene using flotation. 3,710,934, Cl. 209-5.000.
Wynn, Robert W.: *See—*
Randall, David I.; and Wynn, Robert W., 3,711,272.
Wysocki, Joseph J.; Adams, James E.; and Becker, James H., to Xerox Corporation. Electrically controlled thermal imaging system using a cholesteric to nematic phase transition. 3,711,713, Cl. 250-83.00r.
Xerox Corporation: *See—*
Adams, James E., Jr.; and Dailey, John L., 3,711,181.
Amort, Andrew L., 3,711,002.
Carreira, Leonard M.; Stein, Ira S.; and Tulagin, Vsevolod, 3,711,196.
Ernst, Richard J.; and Rod, Trygve R., 3,711,357.
Kluger, Jacob N., 3,710,667.
Wysocki, Joseph J.; Adams, James E.; and Becker, James H., 3,711,713.
Xerox Corporation, mesne: *See—*
McVey, Irvin M.; and Olson, Norman L., 3,711,737.
Yakovin, Viktor Petrovich: *See—*
Khokhlov, Sergei Fedotovich; Yakovin, Viktor Petrovich; Sysoev, Petr Ivanovich; and Egorov, Valery Pavlovich, 3,711,070.
Yale, Ramon L.: *See—*
Mathers, James E.; and Yale, Ramon L., 3,711,418.
Yamada, Isao, to Kabushiki Kaisha Ricoh. Apparatus for converting information recorded on a magnetic recording sheet into visible information. 3,711,655, Cl. 179-100.20s.
Yamada, Naoyoshi: *See—*
Kushihashi, Akira; and Yamada, Naoyoshi, 3,711,322.
Yamakawa, Kiyoshi: *See—*
Shara, Hiroshi; and Yamakawa, Kiyoshi, 3,711,747.
Yamamoto, Masaki: *See—*
Tanaka, Katsunobu; Kimura, Kazuo; and Yamamoto, Masaki, 3,711,373.
Yamamoto, Yasushi Stephen: *See—*
Olofson, Roy A.; and Yamamoto, Yasushi Stephen, 3,711,458.
Yamashita, Kazuo; Nakamura, Harutoki; and Hirakawa, Koichi, to Northern Industries & Mfg., Inc. Molded coil. 3,711,807, Cl. 336-205.000.
Yamauchi, Akira. Method for forming the main body of a catamenial tampon. 3,710,420, Cl. 19-144.500.
Yamawaki, Shunro; and Ohyama, Isao, to Tokico Ltd. Code number detecting device. 3,711,832, Cl. 340-149.00a.
Yamazaki, Chieko: *See—*
Muta, Akinori; Itoda, Gyozo; Noro, Takanobu; and Yamazaki, Chieko, 3,711,585.
Yamazaki, Eiichi; and Kanai, Hiromi, to Hitachi, Ltd. Cathode-ray tube having antenna getter with bimetallic insertion device. 3,711,734, Cl. 313-174.000.
Yang, Tung Han: *See—*
Spence, John H.; Yang, Tung Han; and Anderson, Steven A., 3,710,952.
Yates, Frank: *See—*
Stranger, Donald Arthur; Yates, Frank; and Senior, Jack, 3,710,640.
Yew, Nelson C.: *See—*
Dao, James; and Yew, Nelson C., 3,711,711.
Yonkers, George Smilow; and Kayen, Samuel L., to Berger & Gorin, Inc. Display belt hanger. 3,710,996, Cl. 223-87.000.
York Research & Development Corporation: *See—*
Smith, Dale R., 3,710,802.
Yoshida, Kazutaka; and Ishiwata, Mamoru, to Fuji Photo Film Co., Ltd. Precise method for controlling thickness of a coating. 3,711,312, Cl. 117-34.000.
Yoshikawa, Kiichi. Yoshida Kogyo Kabushiki Kaisha Method of attaching slide fasteners to garment fabric. 3,710,745, Cl. 112-265.000.
Yoshikawa, Minoru; and Ishii, Masaaki, to Canon Kabushiki Kaisha. Magnetic recording and reproducing device for use with an endless recording medium with means for indicating a recordable state within one cycle of the endless recording medium. 3,711,654, l. 179-100.20s.
Yost, Marshall E.: *See—*
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Young , Robert W.: *See—*
Robinson, Charles C.; Graf, Robert E.; Young , Robert W.; and Sproul, Merrill F., 3,711,264.
Young, Carter R.; and James, Henry J., to Otis Engineering Corporation. Method and apparatus for treating and preparing wells for production. 3,710,862, Cl. 166-278.000.
Young, Fred M., to Young Radiator Company. Heat exchanger. 3,710,853, Cl. 165-81.000.
Young, Fred M., to Young Radiator Company. Heat exchanger header and core construction. 3,710,858, Cl. 165-178.000.
Young Radiator Company: *See—*
Young, Fred M., 3,710,853.
Young, Fred M., 3,710,858.
Young, Richard W., to Polaroid Corporation. Image-receiving elements and photographic processes employing same. 3,711,283, Cl. 96-29.00r.
Young, Robert D., to Canyon Research Corporation. Counting devices. 3,711,015, Cl. 235-98.00r.
Young, William O., Jr.: *See—*
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Yount, Carl T.: *See—*
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Zahnradfabrik Friedrichshafen AG: *See—*
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Zaun, Herbert. Necktie stretcher. 3,710,995, Cl. 223-82.000.
Zehnpfennig, Theodore F., to Visidyne Inc. Compact optical display system. 3,711,188, Cl. 350-291.000.
Zeile, Karl: *See—*
Heinz, Karl; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,711,509.
Weber, Karl-Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,711,470.
Zeller, Burton S.: *See—*
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Zeller, Paul: *See—*
Bollag, Werner; Gutmann, Hugo; Hegedus, Balthasar; Kaiser, Ado; Langemann, Albert; Muller, Marcel; and Zeller, Paul, 3,711,543.
Zelna, Robert P., to Fusion, Incorporated. High frequency solder paste gun. 3,711,020, Cl. 239-1.000.
Zenith Radio Corporation: *See—*
Foster, Leigh Curtis, 3,711,735.
Zero Cold, Inc.: *See—*
Bofferding, Richard H.; Mead, Frederick C.; and Hendershot, Richard L., 3,710,734.
Zhevago, Anatoly Fedorovich: *See—*
Koblents, Mark Germanovich; Mitskevich, Gennady Feodosievich; Polovets, Eduard Jurievich; and Zhevago, Anatoly Fedorovich, 3,711,749.
Ziegler, Homer F., Jr., to Anheuser-Busch, Inc. Egg white composition and process of making same. 3,711,299, Cl. 99-113.000.
Ziegler, Norbert; and Schefold, Elmar, to Heckler & Kock GmbH. Self-loading firearms. 3,710,495, Cl. 42-69.00b.
Zielke, Alfred, to ELMEG Electro-Mechanik GmbH. Resetting device for the digital rolls of counters. 3,711,684, Cl. 235-144.0hc.
Ziemek, Gerard; and Nordmann, Gert, to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Tubular metal structure. 3,710,828, Cl. 138-171.000.
Zievers, James F., to Industrial Filter & Pump Mfg. Co. Sugar recovery method and apparatus. 3,711,329, Cl. 127-9.000.
Zimmer, Karl R. Method of producing hidden registered printing. 3,711,353, Cl. 156-267.000.
Zimmer, Siegfried: *See—*
Fromme, Hans-Georg; Nadler, Franz; Zimmer, Siegfried; and Weller, Kurt, 3,710,923.
Zimmerly, James C.: *See—*
Stauffer, Aaron Z.; Herr, John H.; Lepley, James W.; and Zimmerly, James C., 3,710,960.
Zimpleman, Marion D. Clamping device. 3,710,423, Cl. 24-67.500.
Zink, John, Company: *See—*
Zink, John Smith; Goodnight, Hershel; and Reed, Robert D., 3,711,243.
Zink, John Smith; Goodnight, Hershel; and Reed, Robert D., to Zink, John, Company. Regenerative tile for fuel burner. 3,711,243, Cl. 431-351.000.
Zinke-Allmang, Helmut: *See—*
Nonnenmacher, Helmut; Krabetz, Richard; Engelbach, Heinz; and Zinke-Allmang, Helmut, 3,711,540.
Zitkus, Wayne J., to Owens-Illinois, Inc. High power segmented laser device having novel coolant flow arrangement and novel laser discs. 3,711,785, Cl. 331-94.500.
Zoecon Corporation: *See—*
Siddall, John B., 3,711,516.
Siddall, John B., 3,711,517.
Siddall, John B.; and Calame, Jean Pierre, 3,711,548.
Zschocke, Albrecht: *See—*
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Zsindely, Janos: *See—*
Schmid, Hans; and Zsindely, Janos, 3,711,553.
Zukerman, Harold W. Shaped rice product and method for producing same. 3,711,295, Cl. 99-80.00r.
Zumach, Gerhard; Holtschmidt, Hans; and Kuhle, Engelbert, to Farbenfabriken Bayer Aktiengesellschaft. 5-Chloro-3-oxo-1,2,4-thiadiazolines. 3,711,491, Cl. 260-302.00d.
Zumbrunn, Jean-Pierre; and Crommelynck, Francois, to L'Air Liquide, Societe Anoyme pour l'Etude et l'Exploitation des Procedes Claude, Georges. Process for the treatment of phenolated industrial effluent. 3,711,402, Cl. 210-63.000.
Zurcher, Eric P., to Standard Tool & Manufacturing Co. Tool bit adjusting device. 3,711,216, Cl. 408-153.000.
Zvonek, Paul P.: *See—*
Killmer, Donald H.; and Zvonek, Paul P., 3,710,579.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF JANUARY, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Allington, Robert W. Apparatus for density gradient electrophoresis. Re. 27,552, 1–16–73, Cl. 204—301.

Ashton, Robert, M. L. Gullickson, and J. G. Butler, to Massey-Ferguson Ltd. Corn harvester. Re. 27,554, 1–16–73, Cl. 56—105.

Bangerter, Kenneth R. Torque release and shut-off mechanism for pnuematic tools. Re. 27,550, 1–16–73, Cl. 192—.034.

Butler, James G.: *See*—
Ashton, Robert, Gullickson, and Butler. Re. 27,554.

Cole, Edward N., to General Motors Corp. Vehicular transmission pump drives. Re. 27,553, 1–16–73, Cl. 74—730.

Faust, John A., and M. Sahyun; said Faust assignor to said Sahyun, d.b.a. Sahyun Laboratories. β-Alkoxy-trifluoromethylphenalkylamines. Re. 27,551, 1–16–73, Cl. 260—570.6.

Flachbarth, Charles T., R. W. Hadfield, and W. H. Harding. Single and dual service fittings. Re. 27–549, 1–16–73, Cl. 174—49.

General Motors Corp.: *See*—
Cole, Edward N. Re. 27,553.

Gullickson, Myron L.: *See*—
Ashton, Robert, Gullickson, and Butler. Re. 27,554.

Hadfield, Robert W.: *See*—
Flachbarth, Charles T., Hadfield, and Harding. Re. 27,-549.

Harding, William H.: *See*—
Flachbarth, Charles T., Hadfield, and Harding. Re. 27,-549.

Lang, Ernest U., to National-Standard Co. Automatic tire bead making apparatus. Re. 27,547, 1–16–73, Cl. 156—422.

Loughren, Arthur V. Controlled ink-jet copy-reproducing apparatus. Re. 27,555, 1–16–73, Cl. 178—5.20 R.

Massey-Ferguson Ltd.: *See*—
Ashton, Robert, Gullickson, and Butler. Re. 27,554.

National-Standard Co.: *See*—
Lang, Ernest U. Re. 27,547.

Sahyun, Melville: *See*—
Faust, John A., and Sahyun. Re. 27,551.

Schwab, Milton I.: *See*—
Spitz, Albert W., and Schwab. Re. 27,548.

Spitz, Albert W., and M. I. Schwab, to Trio Process Corp. Method of refining copper. Re. 27,548, 1–16–73, Cl. 75—73.

Trio Process Corp.: *See*—
Spitz, Albert W., and Schwab. Re. 27,548.

LIST OF PLANT PATENTEES

Garabedian, John M., to Superior Farming Co. Grapevine. 3,295, 1–16–73, Cl. 47.

Lowry, David B. Pear tree. 3,291, 1–16–73, Cl. 36.

Lucerne, Herman A. Lemon-lime tree. 3,292, 1–16–73, Cl. 45.

Sauret, Clarence H., assignor of a fractional part interest to Richard K. Sauret. Almond tree. 3,293, 1–16–73, Cl. 30.

Sauret, Clarence H., assignor of a fractional part interest to Richard K. Sauret. Almond tree. 3,294, 1–16–73, Cl. 30.

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Sauret, Clarence H. 3,293.
Sauret, Clarence H. 3,294.

Superior Farming Co.: *See*—
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Wakefield, Mary B. Dogwood tree. 3,296, 1–16–73, Cl. 51.

LIST OF DESIGN PATENTEES

Abair, Raymond J.: *See*—
Coleman, Allan M., Hawkins, and Abair. 226,001.

Alexander, Fred C., to Universal-Rundle Corp. Combination bathtub and shower unit. 225,995, 1–16–73, Cl. D23—49.

American Store Equipment: *See*—
Schulte, Donald W. 225,945.

Amerock Corp.: *See*—
Clayton, La Verne E. 225,963.
Tegner, Raymond U. H. 225,947.
Tegner, Raymond U. H. 225,966.

Anderson, Douglas C. Combined cabinet and table unit. 225,-942, 1–16–73, Cl. D6—157.

Anderson, Melvin R., and D. E. Husby, to Westinghouse Electric Corp. Floodlight. 226,020, 1–16–73, Cl. D48—20.

Art Specialty Co.: *See*—
Haft, Howard S. 226,021.

Asenbauer, Donald J. Combined mirror and bathroom accessories holder. 225,948, 1–16–73, Cl. D6—91.

Automata Corp.: *See*—
Singleton, Carlton M. 226,025.

Ballou, Walter G. Door knocker. 225,964, 1–16–73, Cl. D8—177.

Barere, Barbara. Soap cake. 226,038, 1–16–73, Cl. D73—1.

Barth, William, to Royal Crown Cola Co. Bottle. 225,974, 1–16–73, Cl. D9—100.

Beerli, Robert, Jr. Clipboard attachment for a vehicle steering wheel. 226,040, 1–16–73, Cl. D74—2.

Bell, Ted A., to Dresser Industries, Inc. Gauge casing. 226,-024, 1–16–73, Cl. D52—6.

Berry, Fred M.: *See*—
Shirley, James N., Berry, and Lipsky. 226,044.

Black, James R., Jr., to People Products, Statuette. 226,012, 1–16–73, Cl. D29—24.

Blendl, John, to Metal Cabinet Co. Fire extinguisher cabinet. 225,991, 1–16–73, Cl. D16—2.

Boggs, William H., and G. R. Govers. Knobbed endodontic instrument. 225,997, 1–16–73, Cl. D24—1.

Boone, James V. Blade set for dental instrument. 225,998, 1–16–73, Cl. D24—1.

Boston Edison Co.: *See*—
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Donovan, Richard J., and Finney. 226,008.

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Greubel, Jurgen. 225,934.
Greubel, Jurgen. 225,937.
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Brown, Culver S. Stair tread. 225,981, 1–16–73, Cl. D13—7.

Butler, Paul H., B. E. Duggan, and J. S. Koonce, to Credex Corp. Data transceiver. 226,002, 1–16–73, Cl. D26—5.

C/P Corp.: *See*—
Scott, Arthur L. 226,005.
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Cannon, Thomas G., and F. L. Dixson, to Statitrol Corp. Fire detector. 226,037, 1–16–73, Cl. D72—1.

Carver, Richard N., to Louis Marx & Co. Vacuum ball holding and propelling device. 226,018, 1–16–73, Cl. D34—15.

Chadwick, Daniel C. Wheel center unit. 225,989, 1–16–73, Cl. D14—30.

Chapin, Richard M., to Dolly Madison Industries. Furniture panel or similar article. 225,957, 1–16–73, Cl. D6—193.

Chasen, Lee R., to Coats & Clark, Inc. Hanger for pictures, mirrors, plaques or the like. 225,967, 1–16–73, Cl. D8—257.

Christen, Andreas, to Knoll International Inc. Storage cabinet or similar article. 225,943, 1–16–73, Cl. D6—158.

Ciba-Geigy AG: *See*—
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Clayton, La Verne E., to Amerock Corp. Pull. 225,963, 1–16–73, Cl. D8—159.

Coastal Dynamics Corp.: *See*—
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Coats & Clark, Inc.: *See*—
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Coleman, Allan M., C. J. Hawkins, and R. J. Abair, to Coleman Cable & Wire Co. Battery jumper cable assembly with integral light. 226,001, 1–16–73, Cl. D26—1.

Coleman Cable & Wire Co.: *See*—
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Corn, Theodore A., and R. M. Harlick. Combined bun and frankfurter. 225,919, 1–16–73, Cl. D1—26.

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Crawford, Jack E., A. B. Martone, and R. H. Olson, to Mobil Oil Corp. Closure clips for bags or the like. 225,968, 1–16–73, Cl. D8—259.

Credex Corp.: *See*—
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Danjczek, William E., to Koh-I-Noor Rapidograph, Inc. Bottle. 225,975, 1–16–73, Cl. D9—158.
Datel Corp.: *See—*
Rudin, Melvin. 226,003.
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Den-Tal-Ez Mfg. Co.: *See—*
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Di Gaetano, Ann, A., and G. Hair curler. 226,046, 1–16–73, Cl. D86—10.
Di Gaetano, Antonia: *See—*
Di Gaetano, Ann, A. and G. 226,046.
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Dolly Madison Industries: *See—*
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Donovan, Richard J., and W. G. Finney, to Boston Edison Co. Transmission line tower. 226,008, 1–16–73, Cl. D26—12.
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Duern, Gordon L., and D. S. Griffin, to Electrohome Ltd. Console table. 225,927, 1–16–73, Cl. D6—79.
Duern, Gordon L., and D. S. Griffin, to Electrohome Ltd. Chair. 225,930, 1–16–73, Cl. D6—69.
Duern, Gordon L., and D. S. Griffin, to Electrohome Ltd. Chair. 225,931, 1–16–73, Cl. D6—69.
Duern, Gordon L., and D. S. Griffin. Chair. 225,932, 1–16–72, Cl. D6—69.
Duern, Gordon L., and D. S. Griffin, to Electrohome Ltd. Chair. 225,933, 1–16–73, Cl. D6—69.
Duern, Gordon L., and D. S. Griffin, to Electrohome Ltd. Coffee table. 225,941, 1–16–73, Cl. D6—146.
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Graham, Harold, and V. L. Stanfield, assignor of a fractional part interest to Almeta C. Dean. Ornamental puzzle toy. 226,017, 1–16–73, Cl. D34—15.
Greubel, Jurgen, to Braun Aktiengesellschaft. Stand for a hairdryer. 225,934, 1–16–73, Cl. D6—85.
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Horgan, William J., Jr. Door. 225,980, 1–16–73, Cl. D13—1.
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227 3,711,327

CLASS 118
2 3,710,753
13 3,710,754
33 3,710,755
48 3,710,757
61 3,710,756
63 3,710,758
123 3,710,759
227 3,710,760

CLASS 119
19 3,710,761
82 3,710,762

CLASS 123
32EA 3,710,763
3,710,766
32SP 3,710,764
41.12 3,710,765
63 3,710,767
90.3 3,710,768
119R 3,710,769
120 3,710,770
139AW 3,710,771
169R 3,710,772
188AA 3,710,773
192B 3,710,774

CLASS 126
21A 3,710,775
200 3,710,776

CLASS 127
9 3,711,329
3,711,330

CLASS 128
1R 3,710,777
2G 3,710,778
2V 3,710,779
2.05D 3,710,781
2.05F 3,710,792
2.06E 3,710,782
20 3,710,783
24.2 3,710,784
25R 3,710,780
36 3,710,785
66 3,710,786
75 3,710,787
76.5 3,710,788
92BC 3,710,789
165 3,710,790
191A 3,710,791
218NV 3,710,794
260 3,710,795
3,710,796
284 3,710,797
285 3,710,793
303.1 3,710,798
342 3,710,799
488 3,710,800
547 3,710,801

CLASS 131
81R 3,710,802
140C 3,710,805
140P 3,710,803
171A 3,710,804

CLASS 135
4R 3,710,806
49 3,710,807

CLASS 136
6 3,711,331
26 3,711,332
86R 3,711,333
100R 3,711,334
135S 3,711,335
146 3,711,336

CLASS 137
1 3,710,808
3,710,809
3,710,810
5 3,710,811
15 3,710,812
79 3,710,813
83 3,710,814
106 3,710,815
242 3,710,816
268 3,710,817
344 3,710,818
355.17 3,710,819
495 3,710,820
527.8 3,710,821
549 3,710,822
594 3,710,823
596 3,710,824
625.21 3,710,826
625.66 3,710,825
637.4 3,710,827

CLASS 138
171 3,710,828

CLASS 139
304 3,710,829

CLASS 141
93 3,710,830
207 3,710,831

CLASS 144
32 3,710,832
134A 3,710,833
309AC 3,710,834

CLASS 145
52 3,710,835

CLASS 147
28 3,710,836

CLASS 148
12 3,711,338
32.5 3,711,337
3,711,339
36 3,711,340
126 3,711,341
134 3,711,342

CLASS 149
2 3,711,343
19 3,711,344
22 3,711,345

CLASS 156
58 3,711,346
91 3,711,347
137 3,711,348
157 3,711,349
169 3,711,350
175 3,711,351
202 3,711,352
219 3,711,362
267 3,711,353
269 3,711,354
306 3,711,356
422 Re.27,547
499 3,711,355
556 3,711,357
571 3,711,358
583 3,711,359

CLASS 157
1.21 3,710,837
1.24 3,710,838

CLASS 160
372 3,710,839

CLASS 161
44 3,711,360
47 3,711,361
161 3,711,363
190 3,711,364
216 3,711,365

CLASS 162
24 3,711,366
251 3,711,367
354 3,711,368

CLASS 164
73 3,710,840
76 3,710,841
78 3,710,842
82 3,710,843
86 3,710,844
273 3,710,845
278 3,710,846
282 3,710,847
293 3,710,848
322 3,710,849

CLASS 165
9 3,710,850
3,710,851
62 3,710,852
81 3,710,853
111 3,710,854
113 3,710,856
169 3,710,857
178 3,710,858

CLASS 166
.6 3,710,859
75 3,710,860
216 3,710,866
244C 3,710,867
269 3,710,861
272 3,710,863
277 3,710,864
278 3,710,862
308 3,710,865

CLASS 169
2A 3,710,868
26 3,710,855

CLASS 171
16 3,710,869

CLASS 172
40 3,710,870
122 3,710,871
707 3,710,872

CLASS 173
12 3,710,873
3,710,874
3,710,875
43 3,710,876

CLASS 174
23R 3,711,621
35CE 3,711,622
40R 3,711,623
42 3,711,624
49 Re.27,549
52PE 3,711,625
68.5 3,711,626
3,711,627
71R 3,711,628
76 3,711,629
84S 3,710,911
119 3,711,630
120SR 3,711,631
135 3,711,632
3,711,633

CLASS 175
18 3,710,877
66 3,710,878
388 3,710,879

CLASS 176
30 3,711,369
45 3,711,370
50 3,711,371

CLASS 177
137 3,710,880

CLASS 178
5.2R Re.27,555
5.4HE 3,711,635
5.4SY 3,711,634
5.4R 3,711,636
6.6TC 3,711,641
6.6A 3,711,640
6.8 3,711,637
3,711,638
3,711,639
3,711,642
7.2 3,711,643
7.92 3,711,644
22 3,711,645
25 3,711,646

CLASS 179
2TV 3,711,648
2E 3,711,647
6R 3,711,649
15BT 3,711,651
3,711,652
15BW 3,711,650
100.1C 3,711,653
100.2C 3,711,656
100.2S 3,711,654
3,711,655
3,711,657
100.4C 3,711,658
115.5VC 3,711,659
170NC 3,711,660
175.1R 3,711,661

CLASS 180
5R 3,710,881
9.2R 3,710,886
9.38 3,710,882
33 3,710,883
54R 3,710,884
64M 3,710,885
119 3,710,887

CLASS 181
24 3,710,888
33HA 3,710,889
33HC 3,710,890
50 3,710,891
54 3,710,892

CLASS 182
2 3,710,893
106 3,710,894

CLASS 188
5 3,710,895
73.5 3,710,896
75 3,710,897
79.5GT 3,710,898
181T 3,710,899

CLASS 190
41R 3,710,901
51 3,710,900

CLASS 192
.084 3,710,908
4A 3,710,904
18A 3,710,902
28 3,710,903
34 Re.27,550
46 3,710,905
3,710,906
87.17 3,710,907
91R 3,710,909
107R 3,710,914

CLASS 194
4R 3,710,910

CLASS 195
1 3,711,372
28R 3,711,373
3,711,374
29 3,711,375
62 3,711,376
66B 3,711,377
103.5R 3,711,378
127 3,711,379

CLASS 197
49 3,710,912
82 3,710,913
151 3,710,915
189 3,710,916

CLASS 198
20R 3,710,917
30 3,710,918
3,710,919
33AA 3,710,920
3,710,921
3,710,924
33R 3,710,922
81 3,710,923
128 3,710,925
131 3,710,926
202 3,710,927
210 3,710,928

CLASS 200
5R 3,711,664
48A 3,711,662
67G 3,711,663
144B 3,711,665
157 3,711,666
159R 3,711,667
166C 3,711,668
167A 3,711,669
175 3,711,670
221 3,711,671

CLASS 202
248 3,711,380

CLASS 203
20 3,711,381

CLASS 204
1R 3,711,382
29 3,711,383
49 3,711,384
54 3,711,584
59 3,711,385
64R 3,711,386
128 3,711,388
157.1H 3,711,387
159.11 3,711,390
3,711,391
159.12 3,711,389
180R 3,711,392
3,711,393
195P 3,711,395
195S 3,711,394
284 3,711,396
290F 3,711,397
298 3,711,398
301 Re.27,552

CLASS 206
39 3,710,929
46FC 3,710,930
65K 3,710,931

CLASS 208
112 3,711,399

CLASS 209
1 3,710,932
3 3,710,933
5 3,710,934
73 3,710,935
74R 3,710,937
82 3,710,936
111.5 3,710,938
166 3,710,939
315 3,710,940

CLASS 210
21 3,711,400
34 3,711,401
63 3,711,402
84 3,710,941
136 3,710,942
242 3,710,943
261 3,710,944
321 3,710,945
3,710,946
380 3,710,947
484 3,710,948
522 3,710,949

CLASS 212
1 3,710,950

CLASS 213
15 3,710,951
43 3,710,952

CLASS 214
1BS 3,710,953
1Q 3,710,955
2.5 3,710,954
16.1CC 3,710,957
16.1CE 3,710,956
16.4R 3,710,958
17DA 3,710,960
17D 3,710,959
3,710,963
3,710,964
38B 3,710,961
42.1F 3,710,998
75R 3,710,962
130R 3,710,969
515 3,710,965
3,710,966
674 3,710,967
761 3,710,968

CLASS 215
9 3,710,970
3,710,971

CLASS 219
10.49 3,711,672
10.55 3,711,673
3,711,674
69D 3,711,676
69E 3,711,675
131WR 3,711,058
221 3,711,677
227 3,711,678
3,711,679
243 3,711,680
303 3,711,681
535 3,711,682

CLASS 220
3.6 3,710,972
4R 3,710,973
22.4 3,710,974
31 3,710,975

CLASS 221
67 3,710,976
102 3,710,977

CLASS 222
1 3,710,979
64 3,710,980
129.1 3,710,981
134 3,710,982
141 3,710,983
145 3,710,984
146HA 3,710,985
185 3,710,986
386 3,710,987
402.24 3,710,990
404 3,710,988
413 3,710,991
554 3,710,992
562 3,710,989

CLASS 223
67 3,710,994
82 3,710,995
87 3,710,996
91 3,710,993

CLASS 224
25A 3,710,997
42.03B 3,710,999

CLASS 226
8 3,711,000
19 3,711,001
32 3,711,002
52 3,711,005
177 3,711,003
181 3,711,004

CLASS 227
61 3,711,006
101 3,711,007
147 3,711,008

CLASS 228
2 3,711,009
4 3,711,010
56 3,711,019

CLASS 229
7R 3,711,011
92.7 3,711,012

CLASS 235
61.12N 3,711,683
70R 3,711,014
98R 3,711,015
132E 3,711,016
144HC 3,711,684
145R 3,711,685
150.24 3,711,686
151.1 3,711,687
3,711,688
151.34 3,711,689
153A 3,711,691
153 3,711,690
174 3,711,693
175 3,711,692

CLASS 236
59 3,711,017
87 3,711,018

CLASS 239
1 3,711,020
15 3,711,022
54 3,711,023
55 3,711,024
222.11 3,711,025
227 3,711,026
265.17 3,711,013
265.19 3,711,027
288.5 3,711,028
394 3,711,029
397 3,711,030
601 3,711,031

CLASS 240
2.13 3,711,694
4.2 3,711,695
10P 3,711,696
10 3,711,697
10.1 3,711,698
10.6 3,711,703
10.68 3,711,699
41.15 3,711,700
46.13 3,711,701
47 3,711,702
106.1 3,711,704
450 3,711,602

CLASS 241
20 3,711,032
47 3,711,033
100 3,711,034

CLASS 242
7.01 3,711,035
84.1R 3,711,036
107.4 3,711,037

CLASS 243
2 3,711,038

CLASS 244
3.11 3,711,041
3.12 3,711,046
3.21 3,711,040
44 3,711,039
50 3,711,043
77D 3,711,042
118P 3,711,044
153R 3,711,045

CLASS 247
346 3,711,153

CLASS 248
2 3,711,047
64 3,711,049
74R 3,711,050
188 3,711,051
201 3,711,052
298 3,711,053
309 3,711,048
330 3,711,021
400 3,711,054
425 3,711,055
429 3,711,056
430 3,711,057

CLASS 249
219R 3,711,059

CLASS 250
41.9ME 3,711,706
43.5D 3,711,707
43.5R 3,711,708
44 3,711,709
49.5GC 3,711,710
49.5A 3,711,711
59 3,711,712
83R 3,711,713
83.1 3,711,714
83.6 3,711,705
108WS 3,711,715
202 3,711,716
3,711,717
210 3,711,718
213VT 3,711,720
213R 3,711,719
214P 3,711,721
216 3,711,722
219D 3,711,723
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CLASS 251
11 3,711,060
29 3,711,061
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276 3,711,063

CLASS 252

8.55E 3,711,403
3,711,404
8.55R 3,711,405
33.4 3,711,406
41 3,711,407
47.5 3,711,408
70 3,711,409
78 3,711,410
3,711,411
3,711,412
99 3,711,413
118 3,711,414
188.3 3,711,415
300 3,711,417
301.4R 3,711,418
313S 3,711,416
3,711,419
389 3,711,420
408 3,711,421
414 3,711,422
431R 3,711,424
431 3,711,423
439 3,711,425
440 3,711,426
455R 3,711,427
502 3,711,428
518 3,711,328

CLASS 254

29R 3,711,064
150R 3,711,065

CLASS 256

19 3,711,066

CLASS 259

191 3,711,067

CLASS 260

2.1E 3,711,429
2.5B 3,711,430
3,711,431
16 3,711,432
17R 3,711,433
21 3,711,434
28.5R 3,711,436
29.6HN 3,711,435
29.7W 3,711,437
37SB 3,711,520
41R 3,711,438
45.8N 3,711,439
47CB 3,711,440
47XA 3,711,441
75NH 3,711,442
3,711,443
77.5AC 3,711,446
77.5AM 3,711,445
77.5NC 3,711,444
78TF 3,711,447
78.4N 3,711,448
79 3,711,450
3,711,451
3,711,452
79.3MU 3,711,449
79.3A 3,711,453
80.78 3,711,454
85.3R 3,711,455
88.1R 3,711,456
93.7 3,711,457
112.5 3,711,458
146D 3,711,459
154 3,711,460
3,711,461
209 3,711,462
239A 3,711,464
3,711,469
239E 3,711,463
3,711,466
239.1 3,711,471
239.3B 3,711,467
3,711,468
3,711,470
3,711,509
239.3R 3,711,465
240CA 3,711,472
3,711,474
240G 3,711,473
243R 3,711,475
3,711,478
244R 3,711,476
247.1 3,711,477
249.7P 3,711,479
250A 3,711,481
250R 3,711,480
3,711,482
256.5R 3,711,564
260 3,711,483
268R 3,711,484
289A 3,711,485
294.8G 3,711,486
3,711,487
295.5R 3,711,488
296P 3,711,489
297R 3,711,490
302D 3,711,491
3,711,492
307D 3,711,495
307G 3,711,494
308R 3,711,496
309 3,711,497
3,711,498
3,711,499
3,711,500
3,711,501
3,711,502
309.2 3,711,503
3,711,504
309.6 3,711,505
310C 3,711,506
314.5 3,711,508
326.5B 3,711,511
326.5G 3,711,510
326.9 3,711,507
328 3,711,512
3,711,513
340.5 3,711,516
3,711,517
3,711,518
343.3 3,711,515
346.3 3,711,514
348R 3,711,519
397.3 3,711,521
397.4 3,711,522
413 3,711,523
429.7 3,711,524
439R 3,711,525
448A 3,711,529
3,711,535
453R 3,711,530
454 3,711,526
465.4 3,711,531
465.7 3,711,532
465.8A 3,711,078
465.8 3,711,527
468D 3,711,528
469 3,711,533
475.5N 3,711,534
479C 3,711,536
502.4R 3,711,493
514J 3,711,537
524R 3,711,539
530 3,711,540
543P 3,711,541
551P 3,711,542
553A 3,711,543
555A 3,711,544
556N 3,711,545
557B 3,711,538
559S 3,711,546
563B 3,711,550
563R 3,711,547
3,711,548
3,711,549
570.6 Re.27,551
575 3,711,551
577 3,711,552
586R 3,711,553
591 3,711,554
607A 3,711,555
609R 3,710,439
613R 3,711,556
617H 3,711,557
618R 3,711,558
619A 3,711,559
632B 3,711,560
633 3,711,561
649R 3,711,562
3,711,563
666.5 3,711,565
667 3,711,566
668F 3,711,567
683R 3,711,568
683.3 3,711,569
827 3,711,570
858 3,711,571
864 3,711,572
874 3,711,573
878R 3,711,574
881 3,711,575
899 3,711,576
932 3,711,577
942 3,711,578
953 3,711,579
954 3,711,582
963 3,711,580

CLASS 261

41B 3,711,068
41D 3,711,069
79A 3,711,070
92 3,711,071
122 3,711,072

CLASS 263

3 3,711,073
20 3,711,074
33R 3,711,075

CLASS 264

45 3,711,581
49 3,711,583
65 3,711,585
71 3,711,587
88 3,711,586
231 3,711,588
245 3,711,589
318 3,711,590

CLASS 266

23NN 3,711,076
36P 3,711,077

CLASS 267

1R 3,711,079
116 3,711,080

CLASS 269

21 3,711,081
3,711,082

CLASS 270

55 3,711,083
57 3,711,084
79 3,711,085
83 3,711,086

CLASS 271

86 3,711,087
89 3,711,088

CLASS 272

57B 3,711,089
69 3,711,090

CLASS 273

2 3,711,091
26A 3,711,092
69 3,711,093
86C 3,711,094
95R 3,711,095
96R 3,711,096
101 3,711,097
105.2 3,711,098
123R 3,711,099
127R 3,711,100
131AD 3,711,101
153R 3,711,102
191A 3,711,103

CLASS 277

58 3,711,104

CLASS 279

1R 3,711,105
123 3,711,106

CLASS 280

11.35T 3,711,107
21R 3,711,108
28 3,711,109
43.24 3,711,110
47.22 3,711,111
81R 3,711,112
96.2R 3,711,113
124F 3,711,114
150AB 3,711,115
150C 3,711,116
150R 3,711,117
150.5 3,711,118
154.5R 3,711,119
292 3,711,120
400 3,711,121
421 3,711,122

CLASS 285

18 3,711,123
47 3,711,124
111 3,711,125
116 3,711,126
137R 3,711,127
153 3,711,128
235 3,711,129
239 3,711,130
256 3,711,131
382.4 3,711,132

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54A 3,711,133
87 3,711,136
100 3,711,134
104 3,711,135
189.35 3,711,137
189.36F 3,711,138

CLASS 292

37 3,711,139
87 3,711,140

CLASS 294

55 3,711,141
64R 3,711,142
86A 3,711,144
87.2 3,711,143
3,711,145

CLASS 296

1S 3,711,146
28M 3,711,148
28R 3,711,147
63 3,711,149
137E 3,711,150

CLASS 297

45 3,711,151
282 3,711,152
385 3,711,154
456 3,711,155
457 3,711,156

CLASS 298

8R 3,711,157

CLASS 299

27 3,711,158
33 3,711,159
43 3,711,160
82 3,711,161

CLASS 303

21P 3,711,163
21R 3,711,162

CLASS 305

24 3,711,164
35EB 3,711,165

CLASS 307

43 3,711,724
108 3,711,725
117 3,711,726
141.4 3,711,727
254 3,711,728
273 3,711,729
295 3,711,730

CLASS 308

26 3,711,168
73 3,711,169
184 3,711,170
241 3,711,171
300 3,711,166
500R 3,711,167

CLASS 310

53 3,711,731
162 3,711,732

CLASS 312

97.1 3,711,172
140.4 3,711,173
194 3,711,174
208 3,711,175

CLASS 313

109.5 3,711,733
174 3,711,734
216 3,711,735
330 3,711,736
600 3,711,757

CLASS 315

18 3,711,737
29 3,711,738
82 3,711,739
241P 3,711,741
246 3,711,740

CLASS 317

2R 3,711,742
3 3,711,743
13D 3,711,744
15 3,711,747
112 3,711,748
155 3,711,749
157.5 3,711,750
232 3,711,751
234R 3,711,752
235R 3,711,745
3,711,753
258 3,711,746

CLASS 318

126 3,711,754
139 3,711,755
162 3,711,756
675 3,711,758

CLASS 321

5 3,711,760
14 3,711,759
18 3,711,761
57 3,711,762

CLASS 323

9 3,711,763

CLASS 324

.5R 3,711,764
1 3,711,765
34ST 3,711,766
51 3,711,767
53 3,711,768
57N 3,711,769
57R 3,711,770
3,711,771
78D 3,711,772
83R 3,711,773
115 3,711,774
123R 3,711,775
151A 3,711,776

CLASS 325

320 3,711,777
446 3,711,778

CLASS 328

114 3,711,779

CLASS 330

4.5 3,711,780
15 3,711,781
30R 3,711,782
86 3,711,783

CLASS 331

53 3,711,784
94.5P 3,711,789
94.5Q 3,711,791
94.5 3,711,785
3,711,786
3,711,787
3,711,788
3,711,790
96 3,711,792

CLASS 333

3,711,794
97S 3,711,793

CLASS 334

44M 3,711,813

CLASS 335

61 3,711,797
151 3,711,795
153 3,711,798
188 3,711,799
192 3,711,800
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483 3,711,596
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272 3,711,609
273 3,711,610
304 3,711,603
308 3,711,614
358 3,711,611

CLASS 425

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127 3,711,231
150 3,711,232
302 3,711,233
307 3,711,234
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53 3,711,236
69 3,711,237
173 3,711,238
188 3,711,239
253 3,711,240
344 3,711,241
349 3,711,242
351 3,711,243

CLASS 444

1 3,711,862
3,711,863

CLASSIFICATION OF DESIGNS

D 1—	26	225,919			225,940		177	225,964			225,988			226,010			226,029
D 2—	46	225,920			225,941		216	225,965		30	225,989		15	226,011	D56—		226,030
	243	225,921		157	225,942		254	225,966	D16—	2	225,990		50.5	226,004			226,031
D 6—	2	225,926		158	225,943		257	225,967			225,991	D29—	24	226,012	D61—		226,032
	49	225,928		167	225,944		259	225,968		3	225,992	D34—	15	226,013			226,033
	66	225,923		172	225,945		267	225,970	D23—	14	225,993			226,014			226,034
		225,946		177	225,949		273	225,971		24	225,976			226,015	D70—		226,035
	68	225,929			225,950	D 9—	37	225,972		34	225,994			226,016	D71—		226,036
	69	225,925			225,951		72	225,973		49	225,995			226,017	D72—		226,037
		225,930		181	225,952		100	225,974	D24—	1	225,996			226,018	D73—		226,038
		225,931			225,953		158	225,975			225,997	D36—	168	225,922	D74—		226,039
		225,932		189	225,954	D11—	1	225,977			225,998	D44—	1	226,019		2	226,040
		225,933			225,955	D13—		225,978			225,999	D48—	20	226,020		5	226,041
	75	225,924		190	225,956			225,979	D25—		226,000			226,021	D83—	1	226,042
	79	225,927		191	225,936			225,980	D26—		226,001		24	226,022			226,043
	85	225,934		193	225,957		7	225,981		5	226,002	D49—	8.2	225,969			226,044
	89	225,947	D 8—	13	225,958	D14—	3	225,982			226,003	D52—	3	226,023			226,045
	91	225,948		21	225,959			225,983		12	226,005		6	226,024	D86—	10	226,046
	130	225,937		30	225,960			225,984			226,006			226,025			226,047
	146	225,935		81	225,961			225,985			226,007	D54—		226,026	D92—	1	226,048
		225,938		96	225,962			225,986			226,008		12	226,027		21	226,049
		225,939		159	225,963		6	225,987		14	226,009	D55—	1	226,028	D95—	3	226,050

CLASSIFICATION OF PLANTS

P. —	30	3,293	P. —		3,294	P. —	36	3,291	P. —	45	3,292	P. —	47	3,295	P. —	51	3,296

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

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(First number in listirg denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,710,573	3,710,681	3,711,247	3,711,856	3,711,435	3,710,449
3,710,716	3,710,693	3,711,256	8 : 3,710,584	3,711,446	3,710,451
3,710,822	3,710,720	3,711,261	3,710,724	3,711,504	3,710,473
3,710,829	3,710,731	3,711,271	3,710,782	3,711,539	3,710,484
3,710,964	3,710,734	3,711,300	3,710,861	3,711,550	3,710,489
3,711,092	3,710,737	3,711,327	3,711,165	3,711,556	3,710,511
3,711,151	3,710,744	3,711,336	3,711,691	3,711,598	3,710,531
3,711,268	3,710,753	3,711,359	3,711,743	11 : 3,711,773	3,710,570
3,711,344	3,710,754	3,711,405	3,711,844	12 : 3,710,446	3,710,576
3,711,427	3,710,781	3,711,406	9 : 3,710,520	3,710,526	3,710,591
3,711,728	3,710,787	3,711,480	3,710,611	3,710,597	3,710,610
4 : 3,710,401	3,710,814	3,711,486	3,710,680	3,710,672	3,710,661
3,710,691	3,710,817	3,711,516	3,710,709	3,710,733	3,710,671
3,710,771	3,710,830	3,711,517	3,710,713	3,710,750	3,710,695
3,710,806	3,710,833	3,711,530	3,710,751	3,710,793	3,710,708
3,711,085	3,710,839	3,711,536	3,710,989	3,710,887	3,710,729
3,711,693	3,710,885	3,711,547	3,711,061	3,710,901	3,710,730
3,711,863	3,710,886	3,711,548	3,711,171	3,710,924	3,710,752
5 : 3,710,836	3,710,891	3,711,586	3,711,244	3,711,036	3,710,774
3,711,837	3,710,893	3,711,587	3,711,266	3,711,063	3,710,785
6 : Re.27,551	3,710,895	3,711,603	3,711,267	3,711,094	3,710,800
3,710,396	3,710,899	3,711,617	3,711,270	3,711,099	3,710,815
3,710,413	3,710,908	3,711,618	3,711,310	3,711,116	3,710,824
3,710,414	3,710,929	3,711,639	3,711,337	3,711,137	3,710,837
3,710,415	3,710,930	3,711,650	3,711,339	3,711,140	3,710,875
3,710,427	3,710,932	3,711,661	3,711,410	3,711,190	3,710,877
3,710,434	3,710,946	3,711,686	3,711,411	3,711,198	3,710,881
3,710,452	3,710,954	3,711,687	3,711,412	3,711,294	3,710,903
3,710,454	3,711,005	3,711,688	3,711,489	3,711,309	3,710,904
3,710,456	3,711,006	3,711,689	3,711,524	3,711,331	3,710,909
3,710,467	3,711,013	3,711,690	3,711,573	3,711,361	3,710,941
3,710,476	3,711,016	3,711,697	3,711,576	3,711,596	3,710,947
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3,710,513	3,711,046	3,711,723	3,711,717	3,710,394	3,710,970
3,710,540	3,711,049	3,711,735	3,711,727	3,710,398	3,710,985
3,710,549	3,711,053	3,711,737	3,711,739	3,710,534	3,710,991
3,710,552	3,711,055	3,711,746	3,711,742	3,710,679	3,711,022
3,710,562	3,711,068	3,711,750	3,711,774	3,710,696	3,711,023
3,710,569	3,711,076	3,711,753	3,711,800	3,710,820	3,711,031
3,710,574	3,711,080	3,711,759	3,711,803	3,710,894	3,711,057
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